FINAL
2020 ANNUAL GROUNDWATER MONITORING REPORT
SITE 3 – BALL ROAD LANDFILL AND BURN PITS
NAVAL SUPPORT ACTIVITY MECHANICSBURG
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LIST OF ABBREVIATIONS AND ACRONYMS

1,2,4-TMB	1,2,4-Trimethylbenzene
AMR	Annual Monitoring Report
AMS-Rhea	AMS-Rhea JV
AOC	Area of Concern
BVC	BAV1 Vinyl Chloride Reductase
bgs	Below Ground Surface
cells/mL	Cells Per Milliliter
cis-1,2-DCE	Cis-1,2-Dichloroethene
COCs	Contaminants of Concern
CVOCs	Chlorinated Volatile Organic Compounds
DO	Dissolved Oxygen
DHC	Dehalococcoides
DRMO	Defense Reutilization Marketing Offices
EPA	United States Environmental Protection Agency
ft	Feet
IR	Installation Restoration
ISBGT	In-situ Biogeochemical Transformation
J	Estimated Value
LUC	Land Use Control
MCLs	Maximum Contaminant Levels
mg/L	Milligrams per Liter
MSC	Medium Specific Concentration
mS/cm	milliSiemens per Centimeter
MS/MSD	Matrix Spike/Matrix Spike Duplicate
mV	Millivolts
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NSA	Naval Support Activity
NTU	Nephelometric Turbidity Units
ORP	Oxidation Reduction Potential
PADEP	Pennsylvania Department of Environmental Protection
PCBs	Polychlorinated Biphenyls
PRGs	Preliminary Remedial Goals
QA	Quality Assurance
QC	Quality Control
RA	Removal Action
ROD	Record of Decision
SAP	Sampling and Analysis Plan
Site 3	Ball Road Landfill and Burn Pits
TCE	Trichloroethene
TOR	Top of Riser
TtNUS	Tetra Tech NUS, Inc.
UFP-QAPP	Uniform Policy-Quality Assurance Project Plan
VCR	Vinyl Chloride Reductase
VOC	Volatile Organic Compound
WQPs	Water Quality Parameters
µg/L	Micrograms Per Liter

1.0 INTRODUCTION

This report provides a summary of the results of the 2020 annual groundwater sampling at Naval Support Activity (NSA) Mechanicsburg, Pennsylvania. The 2020 sampling event was completed at Site 3 due to site-specific groundwater contamination that requires monitoring and evaluation. Annual sampling has included approximately 50 wells, with most wells located at Site 3; however, nearby wells in adjacent Sites 8 and 9 are included for completeness of the plume evaluation. A brief overview of the site, a summary of the work performed, and a presentation and discussion of the water level data and analytical data for the sampling event are included in this report.

Groundwater flow patterns have been evaluated and current analytical results were compared to prior analytical data to identify changes in groundwater flow patterns and groundwater quality trends since the in-situ chemical oxidation activities performed in 2004. Tabular summaries and graphical analytical trend analyses are provided for selected Contaminants of Concern (COCs) and wells across the site. Finally, conclusions and recommendations are provided. Field forms are provided in Appendix A, historical data tables are provided in Appendix B, and data validation reports are provided in Appendix C.

Based on the results of the 2020 annual groundwater sampling event, as presented herein, it is recommended to suspend the 2021 annual groundwater monitoring event in order to conduct an optimization evaluation on the Site 3 monitoring program and network in 2021. The evaluation will focus on optimizing the monitoring program in order to maximize cost-effectiveness without compromising program and data quality. Refer to Section 7.3 for additional information regarding the recommended optimization evaluation.

The sampling for 2020 and this report were completed by AMS-Rhea JV, a joint venture between Assisted Management Solutions, Inc. and Rhea Engineers & Consultants, Inc. (AMS-Rhea) under contract to Naval Facilities Engineering Command (NAVFAC).

2.0 BACKGROUND

2.1 General Activity Information

NSA Mechanicsburg is a shore activity with a mission to coordinate and provide common base support services to tenant activities and other naval units located on the base in Mechanicsburg, Pennsylvania. Naval Supply Systems Command Headquarters is a major tenant of the base. Buildings occupy approximately 25 percent, roads more than 13 percent, and railroads more than 11 percent of the installation area. NSA Mechanicsburg contains more than 9 million square feet of building space. Of the 155 buildings within the facility, approximately 83 percent are used for supply and storage, slightly more than 7 percent are used for administrative offices, and 4 percent are used for maintenance and production.

During the course of the NSA Mechanicsburg Navy's Installation Restoration (IR) Program, 66 environmental sites have been addressed. Fifteen are classified as distinct IR sites, with an additional 51 as Areas of Concern (AOCs). Ongoing Land Use Control (LUC) inspections are part of the remedies at Sites 1, 3, 8, and 9. At Site 3, long-term groundwater monitoring is ongoing in accordance with the 2004 Record of Decision (ROD).

2.2 Site 3 Environmental History

Site 3 covers approximately 7.5 acres across the southwestern portion of NSA Mechanicsburg (Figure 2-1). Originally, the site served as a quarry for borrow materials that were used for on-site construction. Two large borrow pits were developed and later used as disposal areas (burn pits) for liquid wastes (solvents, lubricants, paints, varnishes, gasoline, and medical supplies) from the mid-1940s to 1977 (Figure 2-1). As a result of the waste disposal (burning) activities at the site, soil and groundwater were impacted, with the most significant contaminants, in terms of volume and risk, being various chlorinated volatile organic compounds (CVOCs). Soils at Site 3 were addressed through a Removal Action (RA) consisting of excavation and offsite disposal of soil from the two burn pits. The soil removal and disposal activities were performed over multiple phases in the mid- to late-1990s. A post-removal action soils ROD requiring institutional controls (deed notice and land use restrictions) was signed in 2000. Currently, most of the site is covered by asphalt that was installed in 1994 as part of an interim remedial action for soils and re-installed in 1999 over the burn pit area after their excavation.

Several groundwater investigations were performed for the fractured limestone aquifer that underlies Site 3 from 1990 through 2003, concurrent with the soil remediation events. Groundwater impacts associated with both burns pits were identified and characterized through detections of organic and inorganic contaminants. The contaminants have been found as both dissolved-phase constituents and as components in non-aqueous phase liquids.

In 2004, a ROD was signed for Site 3 groundwater. The COCs identified in the ROD included 1,4-dichlorobenzene, 1,2,4-trimethylbenzene (1,2,4-TMB), 1,2-dichloroethane, 2-methyl-2-propenenitrile, benzene, carbon tetrachloride, chlorobenzene, cis-1,2-dichloroethene (DCE), trichloroethene (TCE), vinyl chloride (VC), polychlorinated biphenyls (PCB) Aroclor-1260, arsenic, manganese, thallium, benzo(b)fluoranthene, alpha-BHC, DDE, and DDT.[1] The selected alternative for restoration of groundwater was the injection of a chemical oxidant into the aquifer beneath the site to breakdown organic contaminants with subsequent groundwater monitoring and sampling to determine if cleanup goals were achieved. The Navy implemented two phases of chemical oxidant (hydrogen peroxide/chelated iron catalyst) injection activities at Site 3 over the course of four injection events in 2004. Post injection groundwater monitoring was performed from 2004 to 2016 with annual sampling events ongoing. Monitoring has indicated a slow but gradual decrease in the concentration of COCs, although cleanup levels for several COCs have not been achieved.

[1] The COCs 1,2,4-TMB, 1,2-dichloroethane, 2-methyl-2-propenenitrile, thallium, benzo(b)fluoranthene, alpha-BHC, DDE, and DDT were removed from the sampling program after analytical results indicated achievement of ROD cleanup levels.

During 2015 to early 2017, the Navy completed an extensive baseline data collection effort to prepare for the injection of specific amendments for In-situ Biogeochemical Transformation (ISBGT) in support of NAVFAC's evaluation of ISBGT to remediate site contaminants. ISBGT uses in place mineral reactions to force abiotic reactions to promote volatile organic compound (VOC) degradation. Two rounds of injections were conducted in 2016 at several Site 3 wells. The first injection event was conducted between June 7 and June 22, 2016 to stimulate ISBGT in former Burn Pit #1 and former Burn Pit #2. A second injection event, which included injecting the same amendments injected during the first injection event, was conducted between November 29 and December 5, 2016 for continued implementation to promote biogeochemical transformation of the COCs. As a supplement, organic amendments (e.g., lactate) were also injected to foster biological degradation using in-situ microbes. Several post-injection groundwater sampling events were conducted in 2016 and 2017 to evaluate the results of the amendment injections. The report "*In-situ Biogeochemical Transformation Application at Site 3, Former Burn Pits 1 and 2 at NSA Mechanicsburg, Mechanicsburg, PA"* provides a full interpretation of the ISBGT pilot study results (Battelle, 2019).

In 2017, a NAVFAC compliant Tier II Sampling and Analysis Plan (SAP) (AMS-Rhea JV, 2017), with a Uniform Policy-Quality Assurance Project Plan (UFP-QAPP), was generated to guide the Site 3 groundwater monitoring. Under the SAP, 48 wells are to be analyzed for the COCs listed in Table 2-1 (select VOCs, PCBs – [Aroclor 1260 only], arsenic, and manganese), along with additional United States Environmental Protection Agency (EPA) Method 8260 list VOCs and iron (total). In addition, a subset of nine select wells are to be analyzed for geochemistry parameters [alkalinity (total), ammonia, chloride, iron (dissolved), nitrate, nitrite, sulfate, sulfide (total), and total organic carbon], dissolved gases (ethane, ethene, and methane), and dechlorinating bacteria (Dehalococcoides [DHC], tecA reductase, BAV1 VC reductase [BVC], and VC reductase [VCR]). The December 2017 monitoring was the first event conducted under the new SAP. The additional EPA 8260 list VOCs (i.e., VOCs not defined as COCs in the ROD or VOCs that were subsequently removed from the COC list) were removed from the sampling program prior to the 2020 annual monitoring with EPA and Pennsylvania Department of Environmental Protection (PADEP) concurrence.

This report documents the work performed and presents the sampling results for the June 2020 monitoring event. COCs from this round of groundwater sampling are compared to the previous rounds of monitoring to identify concentration trends over time.

3.0 PROJECT ACTIVITIES

3.1 Field Work Performed

A comprehensive round of synoptic water level measurements was performed between June 22 and June 23, 2020, prior to beginning well purging/sampling activities. There was no precipitation during well gauging activities (Weather Underground, 2020). Monitoring well S03M11 was missed during the initial gauging round due to overgrown vegetation but was subsequently gauged on July 1, 2020. Water levels were measured at 64 Site 3 monitoring wells, 8 Site 8 monitoring wells, and 2 Site 9 monitoring wells to allow for interpretation of groundwater flow patterns within and exterior to Sites 3, 8, and 9. During the visit to each well, depth to water and total well depth below top of riser (TOR) were measured and recorded. Table 3-1 is a listing of wells in which water level was measured with both water depth (feet [ft] below TOR) and water level elevation (feet above National Geodetic Vertical Datum).Water level measurement forms are provided in Appendix A-1.

From June 23 through July 1, 2020, 41 monitoring wells were sampled at Site 3, 3 monitoring wells were sampled at Site 8, and 2 monitoring wells were sampled at Site 9 in accordance with the *Final Tier II Sampling and Analysis Plan, Annual Groundwater Sampling and Reporting, NSA Mechanicsburg* (AMS-Rhea JV, 2017). Monitoring wells included in the sampling program are shown on Figure 2-1 and listed in Table 3-2. Monitoring wells S03M61S and S03M64D3 were not sampled due to a lack of water. Monitoring well S03M63D3 was unable to be sampled at the mid-screen depth of 330 feet below TOR. After multiple unsuccessful attempts were made to install the pump to the required depth, S03M63D3 was sampled at a depth of approximately 260 feet below TOR following 40 minutes of purging.

Stainless steel submersible bladder pumps (with dedicated teflon-lined, polyethylene bladders and tubing) were used to purge and sample each well using low-flow sampling methods. The pump intake depth for all monitoring wells was generally set to the middle of the well screen interval to correlate with water producing zones as indicated on Table 3-2 (monitored interval). Water quality parameters (WQPs), including pH, conductivity, oxidation reduction potential (ORP), dissolved oxygen (DO), temperature, and turbidity were recorded approximately every five minutes during purging on field forms (Appendix A-2). Each monitoring well was considered stable once WQPs achieved the following criteria over three consecutive readings:

Parameter	Stabilization Criteria
pH	+/- 0.1 pH units
Conductivity	+/- 3% milliSiemens per centimeter (mS/cm)
ORP	+/- 10 millivolts (mV)
DO	+/- 10% parts per million
Temperature	+/- 10% °C
Turbidity	<10 Nephelometric Turbidity Units (NTUs) or +/- 10%

Subsequent to stabilization, the in-line water monitoring device/flow cell was disconnected from the well and groundwater samples were collected. Groundwater samples were collected directly from the discharge of the sampling pump into the appropriate laboratory-prepared, pre-preserved sample bottles for the types of analysis to be performed. Quality assurance (QA) and quality control (QC) samples were collected during sampling activities. Trip blanks, equipment blanks, duplicate samples, and matrix spike/matrix spike duplicate (MS/MSD) samples were collected and submitted for laboratory analysis at the following frequencies:

- Duplicate samples – 1 per 10 samples;
- MS/MSD samples – 1 per 20 samples;
- Equipment blanks – 1 per week; and
- Trip blanks – 1 per shipping cooler containing samples for VOCs analysis.

Groundwater samples were placed on ice immediately after collection. Samples were either picked up by a designated courier for delivery to the laboratory, or alternatively, delivered by AMS-Rhea personnel to a FedEx location for shipment to the laboratory when a courier was not available. A completed chain-of-custody form

accompanied the samples from the time of collection to receipt by the laboratory. Completed chain-of-custody forms are provided in Appendix A-3.

3.2 Laboratory Analysis

Groundwater samples were analyzed for Aroclor-1260, arsenic, manganese, iron (total), and select VOCs at SGS-Accutest Laboratory, located in Dayton, New Jersey. In addition, groundwater samples from nine monitoring wells (S03M17, -18, -41, -48, -49, -50, -54, -63D3, and -64D1) were analyzed for alkalinity, ammonia, chloride, dissolved iron, nitrate, nitrite, total organic carbon, sulfate, sulfide, dissolved gases (methane, ethane, and ethene), and dechlorinating bacteria. Dechlorinating bacteria samples were analyzed by Microbial Insights, Inc., located in Knoxville, Tennessee.

Per the recommendation of the Fourth Five Year Review (Navy, 2018), laboratory analysis of 1,2,4-TMB was performed for groundwater samples collected at Site 3 during the June 2020 sampling event in light of the new PADEP Statewide Health Standard Medium Specific Concentration (MSC) of 15 micrograms per liter (µg/L). 1,2,4-TMB was not detected at a concentration above the MSC during the June 2020 sampling event; therefore, it is not included in subsequent discussions of analytical results within this report.

3.3 Data Tracking and Validation

Chain-of-custody entries were checked against the sampling schedule to determine if all designated samples were collected and submitted for the appropriate analyses. Upon receipt of the samples by the laboratory, a comparison with the field information was made to verify that each sample was analyzed for the correct COCs. In addition, a check was made to confirm that the correct number and types of QA/QC samples were collected.

The laboratory analytical results were validated in accordance with the EPA Region III Data Validation Guidelines, the National Functional Guidelines, and the project SAP/QAPP (AMS-Rhea JV, 2017). Analytical data was evaluated to determine if the data met data quality objectives, completeness, and to document data quality and usability. Particular emphasis was placed on holding time compliance, equipment calibration, spike recoveries and blank results. No major issues were encountered following the validation process; however, minor qualifiers were added to the VOC and PCB data. Data validation reports are included in Appendix C.

4.0 GROUNDWATER POTENTIOMETRIC SURFACE

Groundwater elevations were calculated from depth to water measurements (Table 3-1) and used to generate potentiometric surface maps centered on Sites 3 and 8. This section presents an interpretation of the contoured maps for the shallow and intermediate/deep bedrock potentiometric surfaces with a discussion of vertical head differentials. Appendix B-1 presents historical groundwater elevation data and well construction information.

Figure 4-1 is a shallow bedrock potentiometric surface map indicating localized Site 3 potentiometric surface highs are present in the area of former Burn Pit #1 (S03M47 through S03M50, S03M53, and S03M54) and near former Burn Pit #2 (S03M25, S03M26, S03M28, S03M57 and S03M58). Elevated groundwater levels are also observed in the Defense Reutilization Marketing Offices (DRMO) area to the east (S03M66D1 and S03M46). Locally, groundwater flows radially from these potentiometric surface highs. Comparison of Figure 4-1 to groundwater flow maps in historic monitoring reports show that the localized mounding at Site 3 is consistently observed. The cause of the localized mounding is unknown, but may be related to past activities at the burn pits.

Figure 4-2 depicts the intermediate/deep bedrock potentiometric surface for Site 3, which indicates potentiometric surface highs located in the area of former Burn Pit #1 (S03M70) and in the DRMO area to the east (S03M66D2). From the potentiometric surface high in the area of former Burn Pit #1, intermediate/deep bedrock groundwater is flowing to the north-northwest towards potentiometric surface lows at S03M71 and S03M73D2 and, to a lesser extent, radially to the south and west. Intermediate/deep bedrock groundwater in the area of S03M66D2 is flowing to the east towards S03M67D2 and north-northwest towards the potentiometric surface low northeast of former Burn Pit #2 near S03M15.

Overall, the lowest groundwater levels in the shallow and intermediate/deep bedrock at Site 3 are located north of the site, indicating that the general Site 3 groundwater flow direction is to the north-northwest.

The measurement of all well water levels in a short period of time allows for evaluation of vertical head differentials. This analysis was performed for 13 well clusters using the 2020 measurements. The following well clusters were evaluated:

- eastern perimeter of Site 8 (S03M01/S03M05);
- northern perimeter of Site 3 (S03M02/S03M06);
- northern and eastern perimeters of Site 3 (S03M03/S03M07);
- southern perimeter of Site 8 (S03M04/S03M08);
- eastern side of Site 3 (S03M61S/S03M61D and S03M62S/S03M62D);
- east of Site 3 (S03M66D1/S03M66D2 and S03M67D1/S03M67D2);
- west of the Site 3 (S03M69D1/S03M69D2);
- south of the Site 3 (S03M68D1/S03M68D2);
- between the two burn pits (S03M73D1/S03M73D2); and
- within the former burn pits (S03M63D1/S03M63D2/S03M63D3 and S03M64D1/S03M64D2/ S03M64D3).

Well locations are indicated on Figures 4-1 and 4-2 with the results of the vertical head differential evaluation presented in Table 4-1.

An upward vertical head differential was observed at three well clusters while downward vertical head differentials were observed for nine well clusters (Table 4-1). The vertical head differentials for well clusters S03M02/S03M06, S03M61S/S03M61D, S03M63D1/S03M63D2, and S03M64D1/S03M64D2 seem to be significantly downward while the vertical head differential for well cluster S03M63D2/S03M63D3 seems to be significantly upward, although the magnitude of the vertical head differential may be related to dynamic

conditions due to variable or slow recharge and pressure build-up within the wells. Vertical head differentials less than 0.10 feet were determined too small to accurately determine a direction. Monitoring well S03M64D3 did not contain sufficient water at the time of the sampling event (monitoring well may be compromised); therefore, a vertical head differential could not be determined for well cluster S03M64D2/S03M64D3. Monitoring well S03M64D3 was also dry during the 2017, 2018, and 2019 sampling events; however, well cluster S03M64D2/S03M64D3 did not have a significantly downward vertical head differential during the 2016 sampling event. Overall, the vertical head differential data suggests that large-scale vertical groundwater movement is primarily downward, and that vertical movement is mainly observed at well clusters S03M02/S03M06, S03M61S/S03M61D, S03M63D1/S03M63D2, and S03M64D1/S03M64D2.

5.0 JUNE 2020 ANALYTICAL RESULTS

The 2020 sampling results indicate the site COCs (Table 2-1) were detected in multiple samples at concentrations above and below their respective Preliminary Remedial Goals (PRGs) or Maximum Contaminant Levels (MCLs) concentration. The site PRGs are defined in the ROD for Site 3 Groundwater (Navy, 2004).

Table 5-1 provides a summary level analysis for the detected COCs, geochemical parameters, gases, and dechlorinating bacteria. The table includes frequency of detection, minimum and maximum concentrations (location of sample containing maximum concentration are provided), averages of positive detections, and averages of all results. Table 5-2 provides detailed data results for all analytes and shading to indicate if a concentration for a COC exceeds the target concentration. A summary of analytical results for each analyte group is provided below.

VOCs

- 1,4-Dichlorobenzene was detected in 24 percent (11 of 46) of the locations sampled with a range from 0.97[2] estimated value (J) µg/L to 85 µg/L. One sample location had a result that exceeded the MCL (75 µg/L).
- Benzene was detected in 32 percent (15 of 46) of the locations sampled with a range from 0.46 J µg/L to 384 µg/L. Eight locations had results that exceeded the MCL (5.0 µg/L).
- Carbon tetrachloride was not detected in the locations sampled.
- Chlorobenzene was detected in 30 percent (14 of 46) of the locations sampled with a range from 0.73 J µg/L to 1,450 µg/L. Seven locations had results that exceeded the MCL (100 µg/L).
- Cis-1,2-DCE was detected in 58 percent (27 of 46) of the locations sampled with a range from 0.55 J µg/L to 7,280 µg/L. Three locations had results that exceeded the MCL (70 µg/L).
- TCE was detected in 50 percent (23 of 46) of the locations sampled with a range from 0.58 J µg/L to 92 µg/L. Eight locations had results that exceeded the MCL (5.0 µg/L).
- VC was detected in 32 percent (15 of 46) of the locations sampled with a range from 1.1 µg/L to 2,570 µg/L. Eleven locations had results that exceeded the MCL (2.0 µg/L).

Polychlorinated Biphenyls (PCBs)

- Aroclor-1260 is the brand name for a Monsanto Chemical Company product that is classified as a PCB. This group of chemicals has an MCL of 0.50 µg/L (EPA, 2009). Aroclor-1260 was detected in 13 percent (6 of 46) of the locations sampled with a range from 0.23 J µg/L to 7.5 µg/L. Three locations had results that exceeded the MCL.

Metals

- Arsenic was detected in 70 percent (32 of 46) of the locations sampled with a range from 0.96 J µg/L to 41 µg/L. Ten locations had results that exceeded the MCL (10 µg/L).
- Manganese was detected in 78 percent (36 of 46) of the locations sampled with a range from 1.4 J µg/L to 684 µg/L. Two locations had results that exceeded the PRG (314 µg/L).

Table 5-3 presents a listing of the wells where PRGs/MCLs were exceeded in the 2011 through 2020 sampling events. The shaded cells in Table 5-3 indicate a concentration increase between the previous and current year values. As shown on Table 5-3, the number of June 2020 COC exceedances is relatively consistent, for most COCs, with the number of COCs that have exceeded their respective PRGs/MCLs in past sampling rounds.

[2] Numbers presented in the text have been rounded to two decimal places if less than one, one decimal place if greater than one but less than ten, and to the nearest whole number if greater than ten. Analytical results within one of their respective standard have not been rounded.

Geochemistry Parameters

- Alkalinity was detected in 100 percent (9 of 9) of the locations sampled with a range from 225 milligrams per liter (mg/L) to 1,190 mg/L. Higher alkalinity concentrations are more favorable for degradation of chlorinated hydrocarbons. The highest concentrations of alkalinity were observed within source wells S03M50 and S03M64D1, which are centrally located within the boundaries of former Burn Pits # 1 and 2, respectively.
- Ammonia was detected in 77 percent (7 of 9) of the locations sampled with a range from 0.37 mg/L to 4.4 mg/L. The presence of ammonia in groundwater is indicative of reducing conditions that are favorable for degradation of chlorinated hydrocarbons.
- Chloride was detected in 100 percent (9 of 9) of the locations sampled with a range from 1.0 J mg/L to 43 mg/L. The highest concentration of chloride was observed within source well S03M50. Higher concentrations of chloride in the most contaminated zones of the plume provides a line of evidence that biodegradation is occurring. Chloride is released into groundwater during biodegradation of chlorinated hydrocarbons.
- Nitrite was not detected at any of the locations sampled in June 2020. The presence of nitrite in groundwater is indicative of reducing conditions that are favorable for the degradation of chlorinated hydrocarbons.
- Nitrate was only detected in one sample at a concentration of 0.13 mg/L. Low concentrations of nitrate (i.e., less than 1.0 mg/L) are favorable for the degradation of chlorinated hydrocarbons.
- Total Organic Carbon was detected in 100 percent (9 of 9) of the locations sampled with a range from 1.1 mg/L to 42 mg/L. Total Organic Carbon concentrations exceeded 20 mg/L in the sample collected from S03M64D1. Total Organic Carbon concentrations greater than 20 mg/L can drive dechlorination.
- Sulfate was detected in 100 percent (9 of 9) of the locations sampled with a range from 1.4 J mg/L to 131 mg/L. Sulfate concentrations were less than 20 mg/L in 3 of 9 samples. Low concentrations of sulfate (i.e., less than 20 mg/L) are favorable for the degradation of chlorinated hydrocarbons.
- Sulfide was detected in 33 percent (3 of 9) of the locations sampled with a range from 0.49 J mg/L to 1.2 J mg/L.

Dissolved Gases

- Methane was detected in 88 percent (8 of 9) of the locations sampled. The presence of methane in groundwater is indicative of strongly reducing, methanogenic conditions that are favorable for efficient reductive dechlorination. In general, methane concentrations higher than background indicate that methanogenesis is occurring.
- Ethane and ethene were detected in 77 percent (7 of 9) of the locations sampled. Ethene is a daughter product of VC, and ethane is a daughter product of ethene. Therefore, the presence of these gases suggests that reductive dechlorination is proceeding to completion.

Dechlorinating Bacteria

- DHC was detected in 100 percent (9 of 9) of the locations sampled with a range from 3.5 cells per milliliter (cells/mL) to 165,000 cells/mL. The likelihood of attenuation is considered high when DHC population sizes are greater than 10,000 cells/mL, moderate when DHC population sizes are between 10 and 10,000 cells/mL, and low at DHC population sizes less than 10 cells/mL (Lu et al., 2006). Cell populations were in the low range in one sampled location, in the moderate range in five sampled locations, and in the high range in three sampled locations in 2020. The lowest cell populations were observed in the two deepest wells sampled for DHC (S03M63D3 and S03M64D1).

Table 5-4 presents the results of groundwater quality parameter measurements taken during sampling (collected using a flow-through cell and turbidity meter). The measured values that were recorded in June 2020 are generally consistent with values that have been recorded in past sampling rounds. Approximately half of the ORP values were negative. Negative ORP values are favorable for the natural attenuation of chlorinated VOCs. Most of the DO values were between the favorable (<0.50 mg/L) and unfavorable (>5.0 mg/L)

screening values, but the degradation of chlorinated VOCs can proceed in this range. Elevated pH values were observed in monitoring well clusters S03M63, S03M464, and S03M66 in 2020, consistent with elevated pH values recorded at these clusters in recent years. Appendix B-2 presents historic groundwater analytical results.

6.0 DISCUSSION OF ANALYTICAL RESULTS AT SITE 3

The presence of TCE and reductive dechlorination by-products [cis-1,2-DCE, and VC] indicates that degradation is on-going at the site, primarily in shallow/intermediate groundwater. In some cases, concentrations of TCE were lower than that of cis-1,2-DCE and VC in the shallow groundwater, most notably in the samples from S03M41 (former Burn Pit #2 source area) and S03M50 (former Burn Pit #1 plume). The concentration of TCE was also lower than that of cis-1,2-DCE and VC in the intermediate groundwater at S03M64D1 and S03M64D2 (former Burn Pit #2), and in the deep groundwater at S03M70 (immediately south of former Burn Pit #1). Elevated concentrations of daughter products cis-1,2-DCE and VC compared to TCE within well S03M41 and S03M50 suggests that reductive dechlorination is occurring in these areas. However, in the intermediate groundwater at S03M63D1, S03M63D2, S03M66D2, and S03M73D1, the TCE concentration was greater than VC. The concentration of TCE also exceeded VC in the deep groundwater at well S03M63D3, and to a lesser extent, S03M72. Chlorobenzene was predominantly detected around former Burn Pit #2, with only minimal detections in the center of former Burn Pit #1 at S03M50 and S03M54. In general, exceedances of groundwater quality criteria for chlorinated VOCs at Site 3 extend approximately 300 ft east of Burn Pit #2.

The TCE, cis-1,2-DCE, and VC isoconcentration contours are shown in three separate maps to allow the depiction of VOC concentration changes with depth. The intervals shown are the shallow interval (represented by monitoring wells screened from 7.0 to 110 ft below ground surface [bgs]), intermediate interval (represented by monitoring wells screened from 145 to 270 ft bgs), and deep interval (represented by monitoring wells screened from 300 to 358 ft bgs). The TCE isocontours are shown on Figures 6-1a through 6-1c, the cis-1,2-DCE isocontours are shown on Figure 6-2a through 6-2c, and the VC isocontours are shown on Figure 6-3a through 6-3c. Isoconcentration maps for three remaining COCs (chlorobenzene, manganese, and arsenic) are presented on Figures 6-4 through 6-6.

The two Site 9 wells (DD-1 and DD-7D), to the north of Site 3, have only low concentrations of TCE, iron, and manganese. All COCs were detected below their respective MCL/PRG in DD-1 and DD-7D (Figure 6-7). The VOC concentrations detected in wells DD-1 and DD-7D are consistent with historical data (Appendix B-2).

6.1 Extent of Contamination

The isoconcentration contours depicted in Figure 6-1a through Figure 6-4 indicate the former Burn Pits as the two primary areas of elevated VOC concentration. As with the mapping of any well concentrations and interpretation of plume extent, bias is introduced by the number and location of wells available for each interval. Observations related to TCE, cis-1,2-DCE, VC, chlorobenzene, manganese, and arsenic distribution are provided in the following bullets.

- TCE concentrations in the shallow interval wells of former Burn Pit #1 (Figure 6-1a) are less than the MCL, with the highest concentration in well S03M51 (1.3 µg/L). In former Burn Pit #2, a plume of TCE is depicted from the highest concentration in well S03M18 (50 µg/L) to the east towards S03M46.
- Figure 6-1b depicts TCE concentrations as measured in the wells screened from 145 to 270 ft bgs (intermediate interval) with the maximum concentration essentially centered in former Burn Pit #1 at well S03M63D2. Of the three wells sampled in this area, well S03M63D2 has the deepest screen interval (250 to 270 ft bgs) and highest TCE concentration (73 µg/L) indicating TCE concentrations increasing with depth. The TCE plume extends north-northeast from former Burn Pit #1 towards former Burn Pit #2. Localized TCE exceedances are also present in former Burn Pit #2 at S03M64D1 (7.5 µg/L) and in the DRMO area to the east of former Burn Pit #2 at S03M66D2 (6.3 µg/L).

- TCE concentrations for samples collected from the deepest screen interval wells (300 to 358 ft bgs) are depicted in Figure 6-1c and indicate a plume limit essentially centered in former Burn Pit #1. Sample results for five wells in or near the footprint of former Burn Pit #1 indicate the highest concentrations directly beneath the pit footprint (S03M63D3) with a low concentration extension to the north-northwest to well S03M71. The lone deep well in former Burn Pit #2, S03M64D3, did not contain sufficient water and could not be sampled. Plume extent in the deep interval cannot be interpreted in the former Burn Pit #2 area; however, it should be noted the TCE concentration in well S03M64D3 was similar to S03M63D3 in 2016.
- Figures 6-2a to c and 6-3a to c depict the plume configurations of cis-1,2-DCE and VC, respectively. The highest concentrations of cis-1,2-DCE and VC occur at shallow wells S03M41 and S03M50 (Figures 6-2a and 6-3a), positioned over former Burn Pit #1 and immediately east of former Burn Pit #2, respectively. TCE was either not detected or was detected at a low, estimated concentration at S03M41 and S03M50, indicating that TCE has degraded in these areas. DHC, BVC, and VCR counts within S03M41 and S03M50 indicate local conditions are favorable for the sustainment of VOC-degrading bacteria.
- Figure 6-4 depicts the chlorobenzene isoconcentrations at Site 3. The highest concentrations of chlorobenzene occur within the footprint of former Burn Pit #2 at shallow wells S03M18 (1,450 µg/L) and S03M57 (1,150 µg/L) and immediately east of former Burn Pit #2 at shallow well S03M03 (1,020 µg/L). Chlorobenzene was either not detected or detected at levels below the MCL in the area of former Burn Pit #1. The chlorobenzene plume in the area of former Burn Pit #2 is generally centered within the burn pit and extends to the east towards the DRMO area.
- Figure 6-5 depicts the manganese isoconcentrations at Site 3. The highest concentrations of manganese (and only exceedances of the PRG) occur within shallow wells S03M54 (643 µg/L) and S03M17 (684 µg/L) at former Burn Pit #1 and former Burn Pit #2, respectively.
- Figure 6-6 depicts the arsenic isoconcentrations at Site 3. The highest concentrations of arsenic occur at deep well S03M70 (40.6 µg/L), immediately south of former Burn Pit #1, and shallow well S03M18 (41.2 µg/L), centered in former Burn Pit #2. In the area of former Burn Pit #1, arsenic exceeded the MCL at one deep well, S03M70. An arsenic plume in the area of former Burn Pit #2 is centered in the northeast portion of the burn pit and extends north, east, and northwest. Arsenic was also detected above the MCL at well cluster S03M66D1/D2 (32.6/26.9 µg/L) in the DRMO area to the east of Site 3.
- In general, the VOC contaminant plumes shown in Figure 6-1a through Figure 6-4 are similar in size and shape as those observed in previous sampling events performed since 2008. Additionally, the contaminant plumes for manganese and arsenic shown in Figures 6-5 and 6-6 have generally remained stable since 2017. VOC contaminant plumes are generally present in the vicinity of the former Burn Pits with an eastward component at former Burn Pit #2.

6.2 Contaminant Trend Evaluation

An evaluation of chemical trends over time was performed for the shallow groundwater at Site 3 to assess changes in COC concentrations and evaluate plume stability. Concentration versus time plots (Graphs 6-1 through 6-7) were prepared for six prevalent contaminants [TCE, cis-1,2-DCE (or total 1,2-DCE if cis-1,2-DCE is not provided in historical results), VC, chlorobenzene, manganese, and arsenic].

The wells were selected to represent source and downgradient locations in the shallow interval, which include the following monitoring wells/well clusters:

- S03M50 and S03M54 (former Burn Pit #1 source area);

- S03M17 and S03M18 (former Burn Pit #2 source area);
- S03M44 (lesser area of elevated VOCs downgradient of former Burn Pit #2); and
- S03M46 (southeastern edge of the Site 3 plume).

Note that the concentration scales for VOCs are on the left side of the graphs and on the right side for manganese and arsenic. Arsenic concentrations versus time were also plotted for the wells on one graph (Graph 6-7) because trends were difficult to discern in the concentration versus time plots for individual wells.

The following is a summary of the trend analyses from the concentration versus time graphs.

- S03M50 (Graph 6-1): Following the chemical oxidant injection in October 2004, VOC concentrations rapidly decreased as indicated by the results from the August 2005 sampling event. TCE concentrations have generally been below the MCL since 2013, with the exception of 2015. Cis-1,2-DCE generally increased from 2009 to 2016, decreased dramatically to below the MCL in 2017, and rebounded to above the MCL in 2018 (2,240 µg/L), 2019 (7,300 µg/L), and 2020 (7,280 µg/L). The VC concentration decreased dramatically in 2017 (but remained above the MCL) and rebounded in 2018 (782 µg/L), 2019 (4,830 µg/L), and 2020 (2,570 µg/L). The rapid reduction of cis-1,2-DCE and VC in the 2017 sampling round most likely resulted from the injections for ISBGT. Manganese concentrations decreased between 2010 through 2016, increased in 2017, decreased through 2019, and rebounded in 2020. Chlorobenzene exceeded the MCL from 2015 to 2019 but dropped below the MCL in 2020 (89 µg/L).
- S03M54 (Graph 6-2): Overall VOC concentrations increased after the chemical oxidation injection activities were performed, then decreased since 2008. Manganese concentrations spiked following the Phase II injection activities but have generally exhibited stable to decreasing concentrations. Manganese and VC concentrations have exceeded their respective PRG and MCL values since 2017. The presence of TCE breakdown products cis- 1,2-DCE and VC, along with the decreasing concentration of TCE, indicates that reductive dechlorination is occurring.
- S03M17 (Graph 6-3): Concentrations of TCE and cis-1,2-DCE exhibit an overall decreasing trend. VC exhibited a relatively stable trend from 2013 to 2020. Chlorobenzene is the primary contaminant found in this well, with lesser concentrations of other VOCs. The chlorobenzene concentrations exhibited a decreasing trend from 2004 and 2011, increased between 2012 and 2014, and have remained relatively stable from 2015 to 2020. The concentration of arsenic increased above the MCL in 2019 (33 µg/L) but decreased to below the MCL in 2020, while the concentration of manganese (684 µg/L) has remained stable since 2018. Concentrations of benzene, chlorobenzene, VC, Aroclor-1260, and manganese were greater than their respective MCLs/PRGs in 2020. Overall VOC concentrations in this source area well are either stable or decreasing slightly.
- S03M18 (Graph 6-4): VOC concentrations decreased significantly during the Phase I and II chemical oxidant injections then rebounded somewhat before leveling off by 2009. Chlorobenzene, the primary contaminant found in this well, presents an overall decreasing but unstable trend. Concentrations of TCE and VC have remained relatively constant from 2009 to 2020. Manganese concentrations spiked following the Phase I and II injection activities and have decreased since, while concentrations of arsenic were generally stable from 2009 to 2020. In the 2020 sample results, concentrations of benzene, chlorobenzene, cis-1,2-DCE, TCE, VC, and arsenic were all greater than their respective MCLs/PRGs; however, a concentration of cis-1,2-DCE greater than the concentration of TCE indicates anaerobic biodegradation is progressing. Decreases in parent product (TCE) concentrations with accompanying increases in daughter product concentrations (cis-1,2-DCE and VC) are generally observed during biodegradation.
- S03M44 (Graph 6-5): VOC concentrations increased after the chemical oxidation injection activities were performed but have decreased since 2005. Manganese concentrations notably spiked following the Phase I and II injection activities in 2004 and the ISBGT injections in 2016, but drastically

decreased to below the PRG in 2019 and 2020. Overall VOC concentrations in this downgradient well decreased between 2015 and 2019; however, concentrations of cis-1,2-DCE, chlorobenzene, and TCE increased in 2020 with the concentration of TCE (10 µg/L) exceeding the MCL. VC concentrations have been less than their respective MCLs since 2017.

- S03M46 (Graph 6-6): VOC concentrations in this downgradient well dropped significantly after the second round of chemical oxidant injection and have been generally stable since 2006 and decreasing since 2012. Chlorobenzene and VC concentrations were below the method reporting limit (i.e., non-detect) since at least 2009. In 2020 there are no COCs present at a concentration exceeding the MCL.
- Arsenic data (Graph 6-7): Arsenic levels in wells S03M17, S03M44, S03M46, S03M50, and S03M54 have generally remained low (below the MCL) since 2009, with the exception of monitoring well S03M17, which exceeded the MCL in 2019 (33 µg/L). Arsenic concentrations in S03M17 fell below the MCL in 2020 (4.5 µg/L). Arsenic concentrations within S03M18 remain above the MCL but decreased in 2019 and 2020 after sharply increasing in 2017 and 2018.

Graphs 6-8 through 6-13 present the same six contaminants that were presented in the line graphs, grouped by analyte. The concentration data are presented on a logarithmic scale to facilitate the presentation of a wide concentration range. Presentation of data in this format allows for visual assessment of long-term trends (or lack thereof) on an analyte-specific basis. Analysis of arsenic and manganese was not performed in 2013. The 2020 observations are summarized in the following bullets.

- TCE (Graph 6-8): TCE concentrations have generally decreased among the wells graphed. Concentrations have decreased significantly overall in wells S03M17, S03M18, S03M41, S03M50, and S03M54.
- 1,2-DCE (cis- or Total) (Graph 6-9): Overall, 1,2-DCE concentrations exhibit stable to decreasing trends between 2001 and 2020. Concentrations in five of the wells decreased slightly or remained stable in 2020. The 1,2-DCE concentration decreased by three orders of magnitude at S03M50 in 2017, rebounded significantly in 2018 and 2019, and leveled off in 2020. The rapid reduction of 1,2-DCE at S03M50 in the 2017 sampling round most likely resulted from the injections for ISBGT. The 1,2-DCE concentration increased by an order of magnitude in 2020 at S03M17, S03M41, and S03M44.
- VC (Graph 6-10): Similar to 1,2-DCE, VC concentrations exhibit stable to decreasing trends in six of the eight evaluated wells between 2001 and 2020. The concentration of VC at S03M17 decreased by three orders of magnitude in 2018 but rebounded in 2019 and 2020. The concentration of VC decreased by two orders of magnitude at S03M50 in 2017 but rebounded in 2018 and 2019. The rapid reduction of VC at S03M50 in the 2017 sampling round most likely resulted from the injections for ISBGT. VC was detected above the MCL at S03M49 from 2017 to 2019; however, VC was not detected at S03M49 in 2020. Elevated concentrations of VC at S03M49 from 2017 to 2019 coincide with a reduction in cis-1,2-DCE (see Graph 6-9), which indicates the progression of reductive dechlorination at this well. VC was not detected in the 2020 samples from wells S03M44 and S03M46.
- Chlorobenzene (Graph 6-11): No overall trends in chlorobenzene concentrations are evident from the graph. The concentration in two wells decreased slightly in 2020. Chlorobenzene was not detected in wells S03M46 and S03M49 in 2020.
- Arsenic (Graph 6-12): Arsenic concentrations have generally remained stable or decreased slightly over time among the wells graphed. Arsenic increased in four wells in 2020 but remains under the MCL in seven of eight evaluated wells. Arsenic was not detected in the sample collected from S03M46.

- Manganese (Graph 6-13): Manganese concentrations increased during the injection activities, and generally decreased or remained stable in seven of the eight evaluated wells.

Figures 6-8 through 6-12 present TCE, cis-1,2-DCE, VC, chlorobenzene, and manganese isoconcentrations, respectively, in Site 3 groundwater during the period from 2010 to 2020. Presenting the isoconcentration contours of six different sampling events on the same figures allows for a visual assessment of the change in shape and size of the contaminant plume. In general, the shapes of the plumes appear consistent and the sizes and concentrations have remained stable or decreased. Only the wells sampled during each event are shown in the appropriate frame of the figure.

The TCE plume proximal to former Burn Pit #1 and #2 appears to have remained the same size over the 2010-2012 timeframe (Figure 6-8). The decrease in the eastern extent of the TCE plume at former Burn Pit #2 can be attributed to a decrease in TCE concentrations to below the MCL at well cluster S03M67D1/67D2 since 2013. There has been a slight increase in the northern extent of the TCE plume at former Burn Pit #1 as shown on the 2014 through 2020 maps. Concentrations in the center of the former Burn Pit #2 plume have decreased by an order of magnitude since 2016, but concentrations have generally remained stable in the center of former Burn Pit #1 since 2012.

The cis-1,2-DCE (Figure 6-9) plumes in former Burn Pit #1 and #2 generally remained the same size from 2010-2012. There has been an increase in the northern extent of the plume at former Burn Pit #1 shown on the 2014 through 2020 maps. Elevated concentrations of cis-1,2-DCE were observed northeast of former Burn Pit #2 at S03M15 in the 2014 and 2016 maps, but the concentration has been below the MCL since 2018. The slight increase in the eastern extent of the cis-1,2-DCE plume at former Burn Pit #2 from 2018 to 2020 can be attributed to an increase in the concentration of cis-1,2-DCE at well S03M44. The concentration of cis-1,2-DCE at well S03M44 remains below the MCL (i.e., 70 µg/L).

The lateral extent and concentrations within the VC plumes (Figure 6-10) associated with former Burn Pits #1 and #2 have generally remained stable since 2010. The apparent smaller extent of the VC plume at former Burn Pit #1 in 2010 is primarily due to a lack of wells to the immediate north of the former burn pit boundary. Elevated concentrations of VC were observed northeast of former Burn Pit #2 at S03M15 between 2010 and 2018; however, the concentration of VC was slightly below the MCL in 2020. Assuming VC generation is a byproduct of biodegradation, it is typical to measure higher VC concentrations proximal to TCE hot spots, such as the Pit areas.

The chlorobenzene plume (Figure 6-11) associated with former Burn Pit #2 appears stable with minimal variance during the period from 2010 to 2020. Chlorobenzene concentrations at S03M50 in former Burn Pit #1 exceeded the MCL (i.e., 100 µg/L) from 2015 to 2019 but was below the MCL in 2020.

The manganese plume extent (Figure 6-12) in Burn Pit #1 appears to have remained stable from 2010 to 2018 with a slight increase to the east and west in 2020. The extent of the manganese plume at former Burn Pit #2 increased between 2012 and 2014 and has generally remained stable through 2020.

Figure 6-13 presents a comparison of the TCE, cis-1,2-DCE, VC, and chlorobenzene plumes based on 2020 sampling data. The plumes for TCE, VC and cis-1,2-DCE have the largest lateral footprint in the area of former Burn Pit #1 while the plume for chlorobenzene is more localized. In the area of former Burn Pit #2, the contaminant plumes are centered in or adjacent to the former Burn Pit and extend eastward into the DRMO area. Overall, the contaminant plumes associated with former Burn Pit #1 have a north-south orientation while the plumes associated with former Burn Pit #2 have an east-west orientation.

6.3 Statistical Evaluation of Contaminant Trend Data

A quantitative evaluation of concentration trends over time was performed using the Mann-Kendall statistic at the 80, 90, and 95 percent confidence levels for all six primary COCs (TCE, 1,2-DCE (cis- or total), chlorobenzene, VC, arsenic, and manganese) and total VOCs. The Mann-Kendall analysis focused primarily on wells screened in the shallow groundwater. The Mann-Kendall analysis was constrained to data from August 2004 (during the Phase II injections) through June 2020. Statistical trend analysis was conducted on a subset of 26 wells (generally in the shallow interval) that have sufficient data points and provide good coverage across the site.[3] The results of the statistical trend analyses are presented in Tables 6-1 through 6-7. Additional statistical trend analysis was conducted in 2020 for a subset of eight wells screened in the intermediate and deep intervals. The results of the additional statistical trend analysis are presented in Table 6-8.

The Mann-Kendall trend analysis compares all of the pairs of concentration values, counts the number of pairs where values are increasing, and subtracts the number of pairs that are decreasing. If there are more pairs that are increasing in concentration, then an upward trend is predicted. If there are more pairs that are decreasing in concentration, then a downward trend is predicted. A trend was considered statistically significant if it passed the 80 percent confidence level test and not significant if a trend was suggested by the data but did not pass the 80 percent confidence level test.

For Tables 6-1 through 6-7, the results are separated into the Pit #1 and #2 source areas and their plumes, the down gradient plume fringe, and Site 9 with trend predictions for the 80, 90, and 95 percent confidence levels (Alpha = 0.20, 0.10, and 0.05, respectively). The results for the 80 percent confidence level are discussed below for total VOCs and the COCs.

Table 6-1 (Total VOCs)

- The analysis for the Burn Pit #1 source area indicates two wells with significant downward trends and one well with no discernible trend (S03M50). In the Burn Pit #2 source area wells, one well has no discernible trend (S03M15) with the remaining four wells showing a decrease in total VOC concentration over time. The results for the wells located in the Burn Pit #1 plume indicate one well with a significant downward trend (S03M49) and one well with a significant upward trend (S03M52). All six wells located in the Burn Pit #2 plume show significant downward trends. The majority of the plume fringe wells also indicate a decreasing total VOC concentration trend at the 80, 90, and 95 percent confidence levels. The results for monitoring wells S03M13 and S03M51, located in the plume fringe, shows no discernible trend at the 80, 90, and 95 percent confidence level. Site 9 wells DD-1 and DD-7D indicate a discernible trend of decreasing concentrations at the 80, 90, and 95 percent confidence levels. The indication of overall decline in total VOC concentration may be a result of the past in-situ treatments but is likely a result of the progression of on-going biodegradation.

Table 6-2 (TCE)

- The Mann-Kendall trend analysis for TCE revealed significant downward trends in the two Pit source areas, plumes, and plume fringe wells. Of the 26 wells in this data set, three well locations had no discernible trend, one well location had a significant upward trend (S03M07) and 20 well locations had a significant downward trend including Site 9 wells DD-1 and DD-7D. The significant upward trend at monitoring well S03M07 was likely influenced by an increase in the method reporting limit in 2019 due to sample dilution. Monitoring wells S03M13 and S03M57 lacked a sufficient number of detected concentrations and were not subject to Mann-Kendall analysis.

[3] Wells must be sampled at least four times and have at least two detections for Mann-Kendall analysis to determine a trend.

Table 6-3 [1,2-DCE (cis- or total)]

- The Mann-Kendall trend analysis for 1,2-DCE (cis- or total) revealed significant downward trends at 18 well locations and no discernible trend at 6 well locations. Monitoring wells S03M20 and S03M21 lacked a sufficient number of detected concentrations and were not subject to Mann-Kendall analysis.

Table 6-4 (VC)

- For this compound, the trend appears to be well-specific and is likely a function of the proximity of the well to an active area of TCE biodegradation. VC concentrations show a significant upward trend in Burn Pit #1 source area well S03M50. Former Burn Pit #2 source area wells S03M15 and S03M18 show no discernible trend and a significant downward trend, respectively. Of the four Pit plume wells, one shows no discernible trend, one shows a significant downward trend, and two show a significant upward trend (S03M41 and S03M48). For the plume fringe wells, six wells show a significant downward trend while three wells show no discernible trend. Ten well locations lacked a sufficient number of detected concentrations and were not subject to Mann-Kendall analysis.

Table 6-5 (Chlorobenzene)

- The Mann-Kendall trend analysis for chlorobenzene revealed significant downward trends at eight well locations, a significant upward trend at two well locations (S03M15 and DD-1), and no discernible trend at six well locations. Ten well locations lacked a sufficient number of detected concentrations and were not subject to Mann-Kendall analysis.

Table 6-6 (Arsenic)

- The Mann-Kendall trend analysis for arsenic revealed significant downward trends at seven well locations, significant upward trends at two well locations (S03M15 and S03M18) located in the Former Burn Pit #2 plume and one well location (S03M48) located in the plume fringe, and no discernible trend at ten well locations. Six well locations lacked a sufficient number of detected concentrations and were not subject to Mann-Kendall analysis.

Table 6-7 (Manganese)

- The Mann-Kendall trend analysis for manganese revealed significant downward trends at 13 well locations, significant upward trends at five well locations (S03M02, S03M13, S03M21, S03M44, and S03M62S), and no discernible trend at eight well locations.

Table 6-8 (Intermediate and Deep Wells)

- The Mann Kendall trend analysis for VOC COCs in intermediate and deep groundwater revealed generally favorable results as significant downward trends or no trends were observed for the analyzed contaminants, including TCE, at most well locations. However, significant upward trends of VC and chlorobenzene were observed in deep groundwater at S03M70.
- The Mann Kendall trend analysis for arsenic and manganese revealed a mix of significant downward trends, no trends, and significant upward trends in intermediate and deep groundwater. Notable findings include significant upward trends for both contaminants at S03M63D1, S03M70, and S03M73D1 and additional significant upward trends for manganese at S03M64D1 and S03M64D2.

7.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Based on the 2020 field work performed and evaluation of both hydrogeologic and analytical data, the conclusions and recommendations are summarized below.

7.1 Summary

From June 22 through July 1, 2020, 46 wells were sampled in accordance with the *Final Tier II Sampling and Analysis Plan, Annual Groundwater Sampling and Reporting, NSA Mechanicsburg* (AMS-Rhea JV, 2017). Monitoring wells S03M61S and S03M64D3 lacked sufficient water or were found to be dry and were not sampled. Monitoring well S03M63D3 was unable to be sampled at the mid-screen depth of 330 feet below TOR but samples were collected from approximately 260 feet below TOR.

Groundwater samples were analyzed at all well locations for ROD COCs 1,4-dichlorobenzene, benzene, carbon tetrachloride, chlorobenzene, cis-1,2-DCE, TCE, VC, PCB Aroclor-1260, arsenic, and manganese. Iron (total) and 1,2,4-TMB were also analyzed at all well locations to aid in the evaluation of the site and based on the recommendation in the Fourth Five Year Review, respectively. In addition, groundwater samples from nine monitoring wells were analyzed for alkalinity, ammonia, chloride, dissolved iron, nitrate, nitrite, total organic carbon, sulfate, sulfide, dissolved gases (methane, ethane, and ethene), and dechlorinating bacteria to evaluate groundwater conditions for attenuation.

Five COCs (TCE, VC, benzene, chlorobenzene, and arsenic) were frequently detected across the site and exceed their respective MCLs at numerous wells (see Table 5-1 for frequency of detection and number of exceedances). One COC (Aroclor-1260) was not detected frequently (6/46 locations) but exceeded the MCL at three locations. 1,4-dichlorobenzene exceeded the MCL at only one location (S03M64D1) while cis-1,2-DCE exceeded the MCL at three locations. Carbon tetrachloride was not detected in any well.

7.2 Conclusions

There are two primary areas of high VOC concentrations: former Burn Pit #1 and former Burn Pit #2, extending east near S03M41. Contaminant plume sizes and concentrations have generally decreased or remained stable from 2004 through 2020. The contaminant plume is stable and located within the site boundaries controlled by the Navy. LUCs have also been implemented as part of the remedial action for the Site 3 soils. As a result, restrictions on the use of Site 3-impacted groundwater are in place.

Mann-Kendall trend analyses was conducted for six primary COCs (TCE, 1,2-DCE (cis- or total), chlorobenzene, VC, arsenic, and manganese). Results were generally favorable with much more downward trending data (74 occurrences) than upward trending data (14 occurrences).

- TCE – significant downward trend or less than two detections in 85 percent of evaluated wells.
- 1,2-DCE – significant downward trend or less than two detections in 77 percent of evaluated wells.
- VC – significant downward trend or less than two detections in 69 percent of evaluated wells.
- Chlorobenzene – significant downward trend or less than two detections in 69 percent of evaluated wells.
- Arsenic – significant downward trend or less than two detections in 50 percent of evaluated wells.
- Manganese – significant downward trend in 50 percent of evaluated wells.

Long-term data suggests that reductive dechlorination of TCE has been occurring at Site 3 based on the presence of TCE biodegradation daughter products 1,2-DCE and VC. Geochemistry, dissolved gas, and

dechlorinating bacteria data provide supporting lines of evidence that groundwater conditions are conducive for anaerobic degradation.

7.3 Recommendations

As indicated at the February 2020 Tier II Partnering Team Meeting, it is the Navy's intention to conduct an optimization evaluation on the Site 3 monitoring program and network in 2021. Similar evaluations have been conducted at other Navy sites to assess the value of each monitoring well location in contributing to plume delineation and concentration trend evaluations. The evaluation will focus on optimizing the monitoring program in order to maximize cost-effectiveness without compromising program and data quality. As shown in Figures 6-8 through 6-13, multiple wells do not contribute to the plume shape, extent, or concentration content. The following five components are generally reviewed by the Navy to ensure a cost-effective monitoring program (Department of the Navy Guidance for Planning and Optimizing Monitoring Strategies, November 2010):

- Number and placement of monitoring points;
- Monitoring duration and/or frequency;
- Analytical protocols;
- Field procedures and techniques; and
- Data management, evaluation, and reporting.

The results of the optimization evaluation will be provided to the EPA and PADEP for review and acceptance prior to implementation. As indicated above, monitoring well S03M64D3 may be compromised and will need to be further evaluated for potential repair or replacement.

Groundwater sampling at Site 3 would resume with the 2022 groundwater sampling event in accordance with the approved monitoring program optimization recommendations. The 2020 analytical results are generally consistent with recent sampling rounds and sampling of many wells multiple times has provided data to confirm trends. It is also recommended to remove 1,2,4-TMB from the sampling suite prior to the next round of sampling based on the results of 2019 and 2020 data (no exceedances of the PADEP MSC).

8.0 REFERENCES

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TABLES

Table 2-1
Contaminants of Concern
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Parameter	COC Project Action Limit
Volatile Organics (µg/L)	
1,4-Dichlorobenzene	75
Benzene	5
Carbon Tetrachloride	5
Chlorobenzene	100
Cis-1,2-Dichloroethene	70
Trichloroethene	5
Vinyl Chloride	2
PCBs (µg/L)	
Aroclor-1260	0.5
Inorganics – Total Metals (µg/L)	
Arsenic	10
Manganese	314

Notes:

µg/L - micrograms per liter
COCs - contaminants of concern
COC project action limits are based on the 2004 Record of Decision for Site 3 Groundwater.
The project action limit is the Federal Maximum Contaminant Level (United States Environmental Protection Agency, 2009), or project specific Preliminary Remediation Goal, as established in the Site 3 ROD (Navy, 2004).

Table 3-1
Well Construction and Water Level Data, Site 3, Site 8, and Site 9 – 2020
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Site	Well Identification	Gauging Date	TOR Elevation (feet, NGVD)	Sounded Depth (feet bgs)	Depth to Water (feet below TOR)	Groundwater Elevation (feet, NGVD)
Site 3	S03M02	6/22/2020	430.21	77.05	32.42	397.79
	S03M03	6/22/2020	429.46	55.10	31.02	398.44
	S03M06	6/22/2020	429.56	132.40	39.48	390.08
	S03M07	6/22/2020	429.85	106.85	31.05	398.80
	S03M13	6/22/2020	428.34	250.18	23.61	404.73
	S03M14	6/22/2020	427.42	99.90	21.22	406.20
	S03M15	6/22/2020	428.32	254.00	30.31	398.01
	S03M16	6/23/2020	427.31	147.40	25.71	401.60
	S03M17	6/23/2020	427.00	107.34	22.05	404.95
	S03M18	6/23/2020	427.65	107.21	22.54	405.11
	S03M19	6/23/2020	433.65	61.57	35.68	397.97
	S03M20	6/23/2020	427.67	100.52	2.71	424.96
	S03M21	6/22/2020	427.09	83.90	22.62	404.47
	S03M22	6/22/2020	429.10	95.63	25.96	403.14
	S03M23	6/23/2020	427.31	100.32	16.39	410.92
	S03M24	6/23/2020	427.29	96.01	21.87	405.42
	S03M25	6/23/2020	427.17	90.71	16.03	411.14
	S03M26	6/23/2020	426.79	69.99	15.64	411.15
	S03M28	6/23/2020	426.71	98.78	16.03	410.68
	S03M29	6/23/2020	427.01	21.21	17.94	409.07
	S03M30	6/22/2020	426.88	NA	NA	NA
	S03M31	6/23/2020	427.12	84.42	26.55	400.57
	S03M32	6/23/2020	426.99	93.90	20.87	406.12
	S03M33	6/23/2020	427.12	74.39	20.16	406.96
	S03M34	6/22/2020	426.30	99.30	23.77	402.53
	S03M35	6/22/2020	427.11	68.00	25.49	401.62
	S03M36	6/22/2020	427.36	26.10	17.52	409.84
	S03M37	6/22/2020	427.48	14.50	DRY	NA
	S03M38	NA	427.27	NA	NA	NA
	S03M41	6/22/2020	427.63	91.10	23.30	404.33
	S03M42	6/22/2020	427.40	73.48	24.10	403.30
	S03M43	6/22/2020	429.62	97.10	28.83	400.79
	S03M44	6/24/2020	431.53	97.00	33.17	398.36
	S03M45	6/23/2020	432.18	67.90	33.94	398.24
	S03M46	6/23/2020	431.14	107.70	18.91	412.23
	S03M47	6/23/2020	430.89	96.86	17.81	413.08
	S03M48	6/23/2020	431.05	99.00	22.66	408.39
	S03M49	6/23/2020	430.01	89.20	16.51	413.50
	S03M50	6/23/2020	430.07	98.02	17.84	412.23
	S03M51	NA	429.78	NA	NA	NA
	S03M52	6/23/2020	430.01	83.80	26.51	403.50
	S03M53	6/22/2020	429.39	60.52	16.58	412.81
	S03M54	6/23/2020	429.44	92.81	16.71	412.73
	S03M55	6/23/2020	428.58	NA	DRY	NA
	S03M56	6/23/2020	427.23	100.29	26.24	400.99
	S03M57	6/23/2020	427.31	99.21	14.22	413.09
	S03M58	6/23/2020	427.45	89.05	14.52	412.93
	S03M60	NA	430.71	NA	NA	NA
	S03M61D	6/22/2020	427.23	117.10	28.20	399.03
	S03M61S	6/22/2020	427.38	35.10	26.51	400.87
	S03M62D	6/22/2020	427.77	117.15	26.43	401.34
	S03M62S	6/22/2020	427.77	43.28	26.44	401.33
	S03M63D1	6/22/2020	429.72	241.11	20.23	409.49
	S03M63D2	6/22/2020	430.16	332.00	31.63	398.53
	S03M63D3	6/22/2020	430.19	270.00	25.85	404.34
	S03M64D1	6/23/2020	427.35	180.65	26.32	401.03
	S03M64D2	6/23/2020	427.44	216.82	30.70	396.74
	S03M64D3	6/23/2020	427.40	322.70	DRY	NA
	S03M65D	6/23/2020	428.42	227.50	30.68	397.74
	S03M66D1	6/23/2020	430.95	187.90	18.72	412.23
	S03M66D2	6/23/2020	430.97	207.90	19.19	411.78
	S03M67D1	6/22/2020	427.74	162.80	26.68	401.06
	S03M67D2	6/22/2020	427.55	247.23	26.60	400.95
	S03M68D1	6/22/2020	429.41	181.62	26.61	402.80
	S03M68D2	6/22/2020	429.42	247.74	26.81	402.61
	S03M70	6/22/2020	429.93	349.93	19.35	410.58
	S03M71	6/22/2020	432.35	350.22	32.70	399.65
	S03M72	6/23/2020	428.44	349.05	26.38	402.06
	S03M73D1	6/23/2020	429.31	188.32	31.29	398.02
	S03M73D2	6/23/2020	429.29	350.01	31.44	397.85
Site 8	S03M01	6/22/2020	430.02	58.50	25.58	404.44
	S03M04	6/23/2020	434.69	57.22	31.56	403.13
	S03M05	6/22/2020	430.60	112.60	26.45	404.15
	S03M08	6/22/2020	433.85	109.10	30.58	403.27
	S03M10	6/22/2020	421.85	111.05	23.52	398.33
	S03M11	7/1/2020	423.00	97.00	26.67	396.33
	S03M69D1	6/22/2020	438.32	193.11	37.18	401.14
	S03M69D2	6/22/2020	438.21	227.01	37.11	401.10
Site 9	DD-1	6/22/2020	422.79	55.10	23.54	399.25
	DD-7D	6/22/2020	415.24	132.40	21.53	393.71

Notes:
NGVD - National Geodetic Vertical Datum
bgs - below ground surface
TOR - Top of Riser
NA - Not Available

Table 3-2
Sampling Location Summary – June 2020
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Site	Well Identification	Date Sampled	Monitored Interval (feet below ground surface, Original Construction)
Site 3	S03M02	06/29/20	17 - 77.8
	S03M03	06/29/20	15 - 57.3
	S03M07	06/29/20	83.5 - 105
	S03M13	06/30/20	209.5 - 249.5
	S03M14	06/24/20	17 - 100
	S03M15	06/30/20	209.5 - 249.5
	S03M16	06/23/20	15 - 100
	S03M17	06/24/20	22 - 110
	S03M18	06/24/20	30.5 - 110
	S03M20	06/24/20	15.5 - 100
	S03M21	06/29/20	7 - 100
	S03M22	06/25/20	42 - 100
	S03M41	06/25/20	15 - 100
	S03M44	06/30/20	15 - 100
	S03M45	06/30/20	19 - 100
	S03M46	06/30/20	12 - 100
	S03M48	06/25/20	13 - 100
	S03M49	06/25/20	16 - 100
	S03M50	06/25/20	23 - 100
	S03M51	06/25/20	19 - 100
	S03M52	06/25/20	25 - 100
	S03M54	06/24/20	45 - 100
	S03M57	06/23/20	13 - 100
	S03M61S*	---	22 - 35.1
	S03M62S	06/29/20	31 - 43.6
	S03M63D1	06/26/20	200 - 250
	S03M63D2	06/26/20	250 - 270
	S03M63D3	06/25/20	300 - 358
	S03M64D1	06/24/20	165 - 185
	S03M64D2	06/26/20	200 - 220
	S03M64D3**	---	310 - 330
	S03M65D	06/29/20	210 - 230
	S03M66D1	06/30/20	170 - 187
	S03M66D2	06/30/20	190 - 210
	S03M67D1	07/01/20	145 - 165
	S03M67D2	07/01/20	230 - 250
	S03M68D1	06/30/20	165 - 185
	S03M68D2	06/30/20	230 - 250
	S03M70	06/29/20	340 - 350
	S03M71	06/29/20	309.5 - 349.5
	S03M72	06/29/20	309.6 - 349.6
	S03M73D1	06/26/20	179 - 189
	S03M73D2	06/26/20	309.9 - 349.9
Site 8	S03M01	07/01/20	17 -59.1
	S03M69D1	06/30/20	175 - 195
	S03M69D2	06/30/20	210 - 230
Site 9	DD-1	07/01/20	9.8 - 56.5
	DD-7D	07/01/20	108.5 - 135

Notes:
*Lack of sufficient water for sampling
* *Well was compromised during sampling event

Table 4-1
Vertical Head Differential Analysis – June 2020
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well Cluster	Mid-Point of Monitored Interval (feet bgs)	Groundwater Elevation (feet NGVD)	Hydraulic Head Difference (feet)	Vertical Head Differential Direction
S03M01/ S03M05	38.05	404.44	0.29	Downward
	99.25	404.15		
S03M02/ S03M06	47.40	397.79	7.71	Downward
	119.25	390.08		
S03M03/ S03M07	36.15	398.44	0.36	Upward
	94.25	398.80		
S03M04/ S03M08	40.00	403.13	0.14	Upward
	98.25	403.27		
S03M61S/ S03M61D	28.55	400.87	1.84	Downward
	111.75	399.03		
S03M62S/ S03M62D	37.30	401.33	0.01	Not Determinable
	111.75	401.34		
S03M63D1/ S03M63D2/ S03M63D3	225.00	409.49	10.96	Downward
	260.00	398.53	5.81	Upward
	329.00	404.34		
S03M64D1/ S03M64D2/ S03M64D3*	175.00	401.03	4.29	Downward
	210.00	396.74	NA	Upward
	320.00	NA		
S03M66D1/ S03M66D2	178.50	412.23	0.45	Downward
	200.00	411.78		
S03M67D1/ S03M67D2	155.00	401.06	0.11	Downward
	240.00	400.95		
S03M68D1/ S03M68D2	175.00	402.80	0.19	Downward
	240.00	402.61		
S03M69D1/ S03M69D2	185.00	401.14	0.04	Not Determinable
	220.00	401.10		
S03M73D1/ S03M73D2	184.00	398.02	0.17	Downward
	329.90	397.85		

Notes:
bgs = below ground surface
NA = Not Available
NGVD = National Geodetic Veritcal Datum
*Well was compromised during sampling event
Differences less than 0.1 feet are too small to reliably determine a head differential direction.

Table 5-1
June 2020 Groundwater Sampling Event
Frequency of Detection and Statistical Summary
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Parameter	COC Target Concentration (MCL)	Frequency of Detection	Number of Exceedances	Minimum Positive Result	Maximum Positive Result	Location of Maximum Result	Average Positive Result	Average Result
Volatile Organics (µg/L)								
1,4-Dichlorobenzene	75	11/46	1	0.97 J	85.1	S03M64D1	18.89	4.52
Benzene	5	15/46	8	0.46 J	384	S03M57	39.22	12.79
Carbon Tetrachloride	5	0/46	0	ND	ND	NA	NA	NA
Chlorobenzene	100	14/46	7	0.73 J	1,450	S03M18	489.42	148.95
cis-1,2-Dichloroethene	70	27/46	3	0.55 J	7,280	S03M50	370.97	217.74
Trichloroethene	5	23/46	8	0.58 J	92.2	S03M63D3	12.91	6.45
Vinyl Chloride	2	15/46	11	1.1	2,570	S03M50	274.86	89.63
PCBs (µg/L)								
Aroclor-1260	0.5	6/46	3	0.23 J	7.50	S03M17	1.59	0.21
Inorganics - Total Metals (µg/L)								
Arsenic	10	32/46	10	0.96 J	41.2	S03M18	10.69	7.44
Iron, Total		42/46	NA	32.0 J	27,100	S03M49	3,360.24	3,068.05
Manganese	314*	36/46	2	1.4 J	684	S03M17	129.77	101.56
Geochemistry Parameters (mg/L)								
Alkalinity, Total		9/9	NA	225	1,190	S03M64D1	433.11	433.11
Ammonia		7/9	NA	0.37	4.4	S03M63D3	1.54	1.20
Chloride		9/9	NA	1.0 J	43.3	S03M50	10.00	10.04
Iron, Dissolved		7/9	NA	79.3 J	15,400	S03M54	3,774.90	2,936.03
Nitrite		ND	NA	ND	ND	NA	NA	NA
Nitrate		1/9	NA	0.13	0.13	S03M64D1	NA	NA
Total Organic Carbon (TOC)		9/9	NA	1.1	41.9	S03M64D1	7.37	7.37
Sulfate		9/9	NA	1.4 J	131	S03M49	48.60	48.60
Sulfide		3/9	NA	0.49 J	1.2 J	S03M50	0.76	0.25
Gases (µg/L)								
Ethane		7/9	NA	0.88	88.8	S03M50	21.48	16.71
Ethene		7/9	NA	0.58	148	S03M50	36.51	28.39
Methane		8/9	NA	2.10	7,520	S03M17	2,935.55	2,609.37
Dechlorinating Bacteria (cells/mL)								
Dehalococcoides (DHC)		9/9	NA	3.45	165,000	S03M50	27,800	27,800
tceA Reductase (TCE)		4/9	NA	0.1 J	3.4	S03M18	1.78	0.78
BAV1 Vinyl Chloride Reductase (BVC)		9/9	NA	0.30 J	14,600	S03M50	1,930	1,930
Vinyl Chloride Reductase (VCR)		8/9	NA	2.40	20,500	S03M50	13,100	1,460

Notes:

* Indicates a Preliminary Remedial Goal (PRG) not MCL
MCL = Maximum Contaminant Level
mg/L = milligrams per liter
µg/L = micrograms per liter
cells/mL = cells per milliliter
NA = Not Applicable
ND = Not Detected
Federal MCL (United States Environmental Protection Agency, 2009)
PRG as established in the Site 3 Record of Decision (Navy, 2004)
Average Result = (sum of all concentrations)/(total samples analyzed)

Validation Qualifier:

J = Estimated Concentration

Table 5-2
Summary of Groundwater Sample Analytical Detections - 2020
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location:	MCL or PRG	Site 8	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3	Site 3
Client Sample ID:		S03M01-070120	S03M02-062920	S03M03-062920	S03M07-062920	S03M13-063020	S03M14-062420	S03M15-063020	S03M16-062320	S03M17-062420	S03M17D-062420	S03M18-062420	S03M18-062420DUP	S03M20-062420	S03M21-062920	S03M22-062520	S03M41-062520	S03M41D-062520	S03M44-063020	S03M45-063020
Lab Sample ID:		JD8742-58	JD8742-38	JD8742-39	JD8742-37	JD8742-40	JD8742-9	JD8742-44	JD8742-2	JD8742-5	JD8742-6	JD8742-4	JD8742-7	JD8742-11	JD8742-36	JD8742-21	JD8742-18	JD8742-19	JD8742-52	JD8742-41
Date Sampled:		7/1/2020	6/29/2020	6/29/2020	6/29/2020	6/30/2020	6/24/2020	6/30/2020	6/23/2020	6/24/2020	6/24/2020	6/24/2020	6/24/2020	6/24/2020	6/29/2020	6/25/2020	6/25/2020	6/25/2020	6/30/2020	6/30/2020
Volatile Organic Compounds (Method 8260C) (µg/L)																				
Benzene	5	ND (0.50)	ND (0.50)	**8.9**	**15.3**	ND (0.50)	ND (0.50)	**1.6**	ND (0.50)	**7.8**	**9.8**	**107**	**100**	ND (0.50)	ND (0.50)	ND (0.50)	**24**	**13**	ND (0.50)	ND (0.50)
Carbon tetrachloride	5	ND (1.0)	ND (1.0)	ND (2.0)	ND (2.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (4.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (2.5)	ND (1.0)	ND (1.0)	ND (1.0)
Chlorobenzene	100	ND (1.0)	ND (1.0)	**1020**	**961**	ND (1.0)	**1.6**	**28**	ND (1.0)	**935**	**1120**	**1450**	**1370**	ND (1.0)	ND (1.0)	ND (1.0)	**612**	**641**	**11.7**	ND (1.0)
1,4-Dichlorobenzene	75	ND (1.0)	ND (1.0)	**6**	**9.3**	ND (1.0)	**1.1**	**0.97** J	ND (1.0)	**9.4**	**11.7**	**5.4**	**5.4**	ND (1.0)	ND (1.0)	ND (1.0)	**9.2**	**5.6**	**1.9**	ND (1.0)
cis-1,2-Dichloroethene	70	ND (1.0)	ND (1.0)	**5.8**	ND (2.0)	**0.55** J	**0.72** J	**1**	**2.1**	**43.7**	**21.6**	**224**	**208**	ND (1.0)	ND (1.0)	**4.7**	**2220**	**546**	**60.2**	**2.5**
Trichloroethene	5	ND (1.0)	ND (1.0)	ND (2.0)	ND (2.0)	ND (1.0)	ND (1.0)	ND (1.0)	**1.2**	ND (4.0)	ND (5.0)	**50.3**	**46**	ND (1.0)	ND (1.0)	**1.2**	**1.7** J	**2.1**	**10**	**0.58** J
1,2,4-Trimethylbenzene[1]	15[2]	ND (2.0)	ND (2.0)	ND (4.0)	ND (4.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (8.0)	ND (10)	ND (10)	ND (10)	ND (2.0)	ND (2.0)	ND (2.0)	ND (5.0)	ND (2.0)	ND (2.0)	ND (2.0)
Vinyl chloride	2	ND (1.0)	ND (1.0)	**1.7** J	ND (2.0)	ND (1.0)	ND (1.0)	**1.7**	ND (1.0)	**49**	**45.3**	**11.5**	**11.3**	ND (1.0)	ND (1.0)	ND (1.0)	**1430**	**377**	ND (1.0)	ND (1.0)
Polychlorinated Biphenyls (Method 8082A) (µg/L)																				
Aroclor 1260	0.5	ND (0.33)	ND (0.33)	ND (0.33)	ND (0.33)	ND (0.33)	ND (0.33)	ND (0.33)	ND (0.33) UJ	**7.5**	**9.3**	ND (0.33)	ND (0.33)	**0.32** J	ND (0.33)	ND (0.33)	**0.4**	**0.73**	ND (0.33)	ND (0.33)
Metals (Method 6010) (µg/L)																				
Arsenic	10	ND (3.0)	ND (3.0)	**11.8**	**19.8**	**7.1**	**20.2**	**12.3**	**2.1** J	**4.5**	**5.9**	**41.2**	**41.3**	ND (3.0)	ND (3.0)	ND (3.0)	**8.1**	**9.1**	**1.1** J	**3.5**
Iron		**32** J	**478**	**6330**	**5280**	**849**	**1170**	**308**	**4730**	**5660/3750**	**5950**	**3920/3580**	**3930**	**5470**	**608**	**5610**	**5670/3310**	**5940**	**765**	**73.7** J
Manganese	314*	**2.4** J	**13.9** J	**231**	**192**	**6.9** J	**123**	**28.5**	**297**	**684**	**662**	**194**	**194**	**55.9**	**21.3**	**52**	**215**	**214**	**113**	**16.7**
Gases (Method RSK-175) (µg/L)																				
Methane		-	-	-	-	-	-	-	-	**7520**	-	**2560**	-	-	-	-	**3070**		-	-
Ethane		-	-	-	-	-	-	-	-	**12.3**	-	**11.8**	-	-	-	-	**12.8**		-	-
Ethene		-	-	-	-	-	-	-	-	**16.5**	-	**0.59**	-	-	-	-	**74.4**		-	-
Geochemistry Parameters (mg/L)																				
Alkalinity, Total as CaCO3		-	-	-	-	-	-	-	-	**290**	-	**288**	-	-	-	-	**225**		-	-
Chloride		-	-	-	-	-	-	-	-	**8.6**	-	**5.7**	-	-	-	-	**2.8**		-	-
Nitrogen, Ammonia		-	-	-	-	-	-	-	-	**1.1**	-	**0.68**	-	-	-	-	**0.37**		-	-
Nitrogen, Nitrate		-	-	-	-	-	-	-	-	ND (0.11)	-	ND (0.11)	-	-	-	-	ND (0.11)		-	-
Nitrogen, Nitrate + Nitrite		-	-	-	-	-	-	-	-	ND (0.10)	-	ND (0.10)	-	-	-	-	ND (0.10)		-	-
Sulfate		-	-	-	-	-	-	-	-	**53.9**	-	**1.4** J	-	-	-	-	**10.6**		-	-
Sulfide		-	-	-	-	-	-	-	-	ND (2.0)	-	ND (2.0)	-	-	-	-	ND (2.0)		-	-
Total Organic Carbon		-	-	-	-	-	-	-	-	**3.8**	-	**2.3**	-	-	-	-	**2.6**		-	-
Dechlorinating Bacteria (Method qPCR) (cells/mL)																				
Dehalococcoides (DHC)		-	-	-	-	-	-	-	-	**6.10E+04**		**2.16E+04**	-	-	-	-	**2.19E+03**		-	-
tceA Reductase (TCE)		-	-	-	-	-	-	-	-	**2.20E+00**		**3.40E+00**	-	-	-	-	**1.40E+00**		-	-
BAV1 Vinyl Chloride Reductase (BVC)		-	-	-	-	-	-	-	-	**2.20E+03**		**3.92E+02**	-	-	-	-	**1.71E+02**		-	-
Vinyl Chloride Reductase (VCR)		-	-	-	-	-	-	-	-	**1.19E+04**		**7.55E+02**	-	-	-	-	**3.41E+02**		-	-

Notes:
Lab - SGS Accutest
Bold concentrations indicate a positive detection above the laboratory reporting limit.
Bold, grey shaded concentrations indicate an exceedance of the Federal MCL (USEPA, 2009) or PRG, as established in Site 3 ROD (Navy, 2004).
*Indicates a PRG not MCL
(1) - 1,2,4-Trimethylbenzene is not a COC as defined in the ROD (Navy, 2004)
(2) - Indicates a MSC
MCL - Maximum Contaminant Level
MSC - Medium Specific Concentration as identified in the Pennsylvania Statewide Health Standard
PRG - Preliminary Remediation Goal
ND - Not Detected (Value inside parentheses indicates associated Method Reporting Limit)
Dash indicates constituent was not analzyed
ID - Identification
mg/L - milligrams per liter
µg/L - micrograms per liter
cells/mL - cells per milliliter
J - Estimated concentration
UJ - Not detected, associated Method Reporting Limit is an estimation
Results presented as Result/Result indicate the detections for Total Iron and Dissolved Iron, respectively
Monitoring well S03M64D3 was found to be compromised during the sampling event and was not sampled
Monitoring well S03M61S did not contain a sufficient volume of water and was not sampled

Table 5-2
Summary of Groundwater Sample Analytical Detections - 2020
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location:		Site 3		Site 3		Site 3		Site 3		Site 3		Site 3		Site 3		Site 3		Off-Site		Site 3		Site 3		Site 3		Site 3		Site 3		Site 3		Site 3		Site 3	
Client Sample ID:	MCL or PRG	S03M46-063020		S03M48-062520		S03M49-062520		S03M50-062520		S03M50D-062520		S03M51-062520		S03M52-062520		S03M54-062420		S03M57-062320		S03M62S-062920		S03M63D1-062620		S03M63D2-062620		S03M63D3-062520		S03M64D1-062420		S03M64D1D-062420		S03M64D2-062620		S03M65D-062620		S03M66D1-063020	
Lab Sample ID:		JD8742-51		JD8742-20		JD8742-22		JD8742-15		JD8742-16		JD8742-24		JD8742-23		JD8742-8		JD8742-1		JD8742-35		JD8742-26		JD8742-25		JD8742-17		JD8742-12		JD8742-13		JD8742-27		JD8742-28		JD8742-42	
Date Sampled:		6/30/2020		6/25/2020		6/25/2020		6/25/2020		6/25/2020		6/25/2020		6/25/2020		6/24/2020		6/23/2020		6/29/2020		6/26/2020		6/26/2020		6/25/2020		6/24/2020		6/24/2020		6/26/2020		6/26/2020		6/30/2020	
Volatile Organic Compounds (Method 8260C) (µg/L)																																			
Benzene	5	ND (0.50)		ND (0.50)		ND (0.50)		**12.3**	J	**12.1**	J	ND (0.50)		ND (0.50)		ND (0.50)		**384**		ND (0.50)		**4.4**		**4.1**		**0.95**		**15.4**		**15.2**		**1.4**	J	ND (0.50)	UJ	ND (0.50)	
Carbon tetrachloride	5	ND (1.0)		ND (1.0)		ND (1.0)		ND (25)		ND (25)		ND (1.0)		ND (1.0)		ND (1.0)		ND (5.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)	UJ	ND (1.0)	UJ	ND (1.0)	
Chlorobenzene	100	ND (1.0)		ND (1.0)		ND (1.0)		**89.2**		**87.1**		ND (1.0)		ND (1.0)		**1.4**		**1150**		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		**561**		**550**		**30.3**	J	ND (1.0)	UJ	ND (1.0)	
1,4-Dichlorobenzene	75	ND (1.0)		ND (1.0)		ND (1.0)		**20.7**	J	**20.4**	J	ND (1.0)		ND (1.0)		ND (1.0)		**58.8**		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		**85.1**		**85.4**		ND (1.0)	UJ	ND (1.0)	UJ	ND (1.0)	
cis-1,2-Dichloroethene	70	ND (1.0)		**3.1**		**15.9**		**7280**		**7070**		**2.4**		ND (1.0)		**2.2**		ND (5.0)		ND (1.0)		**3.6**		**22.7**		**34.9**		**11.3**		**11.3**		**7.9**	J	ND (1.0)	UJ	ND (1.0)	
Trichloroethene	5	**1.8**		**0.97**	J	**1.1**		ND (25)		ND (25)		**1.3**		ND (1.0)		ND (1.0)		ND (5.0)		ND (1.0)		**13.3**		**72.6**		**92.2**		**7.5**		**7.7**		**1.7**	J	ND (1.0)	UJ	**0.98**	J
1,2,4-Trimethylbenzene[1]	15[2]	ND (2.0)		ND (2.0)		ND (2.0)		ND (50)		ND (50)		ND (2.0)		ND (2.0)		ND (2.0)		ND (10)		ND (2.0)		ND (2.0)		ND (2.0)		ND (2.0)		**5.9**		**5.9**		ND (2.0)	UJ	ND (2.0)	UJ	ND (2.0)	
Vinyl chloride	2	ND (1.0)		ND (1.0)		ND (1.0)		**2570**		**2600**		ND (1.0)		ND (1.0)		**3.7**		ND (5.0)		ND (1.0)		**1.1**		**5.1**		**6**		**16.2**		**16.5**		**3**	J	ND (1.0)	UJ	ND (1.0)	
Polychlorinated Biphenyls (Method 8082A) (µg/L)																																			
Aroclor 1260	0.5	ND (0.33)		ND (0.33)		**0.55**		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		**0.59**		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		**0.23**	J	ND (0.33)		ND (0.33)	
Metals (Method 6010) (µg/L)																																			
Arsenic	10	ND (3.0)		**3**		**9.7**		**2.6**	J	**2.7**	J	**3**		ND (3.0)		**3.2**		**0.96**	J	ND (3.0)		ND (3.0)		**1.8**	J	**2.8**	J	**8.8**		**8**		**28.8**		**17.3**		**32.6**	
Iron		**34.9**	J	**1480**/ND (100)		**27100/124**		**14000/181**		**14000**		**26500**		**271**		**15600/15400**		**907**		ND (100)		**92**	J	**79**	J	**816**/ND(100)		**124/79.3**	J	**120**		**90.1**	J	**120**		ND (100)	
Manganese	314*	**1.4**	J	**242**		**274**		**127**		**122**		**302**		**93.3**		**643**		**153**		ND (15)		**2**	J	ND (15)		**15.2**		ND (15)		ND (15)		ND (15)		**17.3**		ND (15)	
Gases (Method RSK-175) (µg/L)																																			
Methane		-		**2.1**		ND (0.11)		**5220**		-		-		-		**358**		-		-		-		-		**24.3**		**4730**		-		-		-		-	
Ethane		-		ND (0.23)		ND (0.23)		**88.8**		-		-		-		**1.4**		-		-		-		-		**0.88**		**22.4**		-		-		-		-	
Ethene		-		ND (0.31)		ND (0.31)		**148**		-		-		-		**0.58**		-		-		-		-		**4.7**		**10.8**		-		-		-		-	
Geochemistry Parameters (mg/L)																																			
Alkalinity, Total as CaCO3		-		**311**		**380**		**515**		-		-		-		**334**		-		-		-		-		**365**		**1190**		-		-		-		-	
Chloride		-		**1.3**	J	**1.0**	J	**43.3**		-		-		-		**1.8**	J	-		-		-		-		**9.4**		**16.5**		-		-		-		-	
Nitrogen, Ammonia		-		ND (0.20)		ND (0.20)		**0.85**		-		-		-		**0.81**		-		-		-		-		**4.4**		**2.6**		-		-		-		-	
Nitrogen, Nitrate		-		ND (0.11)		ND (0.11)		ND (0.11)		-		-		-		ND (0.11)		-		-		-		-		ND (0.11)		**0.13**		-		-		-		-	
Nitrogen, Nitrate + Nitrite		-		ND (0.10)		**0.092**	J	ND (0.10)		-		-		-		ND (0.10)		-		-		-		-		ND (0.10)		**0.13**		-		-		-		-	
Sulfate		-		**86.5**		**131**		**73.9**		-		-		-		**12.6**		-		-		-		-		**37.7**		**29.8**		-		-		-		-	
Sulfide		-		ND (2.0)		ND (2.0)		**1.2**	J	-		-		-		ND (2.0)		-		-		-		-		**0.49**	J	**0.6**	J	-		-		-		-	
Total Organic Carbon		-		**1.1**		**2**		**4.7**		-		-		-		**1.8**		-		-		-		-		**6.2**		**41.9**		-		-		-		-	
Dechlorinating Bacteria (Method qPCR) (cells/mL)																																			
Dehalococcoides (DHC)		-		**3.32E+01**		**5.71E+02**		**1.65E+05**		-		-		-		**5.65E+01**		-		-		-		-		**3.45E+00**		**1.70E+01**		**1.75E+01**		-		-		-	
tceA Reductase (TCE)		-		ND (0.5)		ND (0.5)		ND (0.5)		-		-		-		ND (0.5)		-		-		-		-		ND (1.20)		**1.00E-01**	J	**2.00E-01**	J	-		-		-	
BAV1 Vinyl Chloride Reductase (BVC)		-		**3.00E-01**	J	**4.88E+01**		**1.46E+04**		-		-		-		**1.50E+00**		-		-		-		-		**3.00E-01**	J	**9.00E-01**		**7.00E-01**		-		-		-	
Vinyl Chloride Reductase (VCR)		-		**1.03E+01**		**1.13E+02**		**2.05E+04**		-		-		-		**7.60E+00**		-		-		-		-		ND (1.20)		**2.40E+00**		**1.90E+00**		-		-		-	

Table 5-2
Summary of Groundwater Sample Analytical Detections - 2020
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location:	MCL or PRG	Site 3		Site 3		Site 3		Off-Site		Off-Site		Site 8		Site 8		Site 3		Site 3		Site 3		Site 3		Site 3		Site 3		Site 9		Site 9	
Client Sample ID:		S03M66D2-063020		S03M67D1-070120		S03M67D2-070120		S03M68D1-063020		S03M68D2-063020		S03M69D1-063020		S03M69D2-063020		S03M70-062920		S03M71-062920		S03M72-062920		S03M73D1-062620		S03M73D2-062620		DD-1-070120		DD-7D-070120	
Lab Sample ID:		JD8742-43		JD8742-54		JD8742-55		JD8742-47		JD8742-48		JD8742-49		JD8742-50		JD8742-34		JD8742-33		JD8742-32		JD8742-29		JD8742-30		JD8742-53		JD8742-57	
Date Sampled:		6/30/2020		7/1/2020		7/1/2020		6/30/2020		6/30/2020		6/30/2020		6/30/2020		6/29/2020		6/29/2020		6/29/2020		6/26/2020		6/26/2020		7/1/2020		7/1/2020	
Volatile Organic Compounds (Method 8260C) (µg/L)																													
Benzene	5	ND (0.50)		ND (0.50)		ND (0.50)		ND (0.50)		ND (0.50)		ND (0.50)		ND (0.50)		ND (0.50)		ND (0.50)		**0.46**	J	ND (0.50)	UJ	**0.82**		ND (0.50)		ND (0.50)	
Carbon tetrachloride	5	ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)	UJ	ND (1.0)		ND (1.0)		ND (1.0)	
Chlorobenzene	100	ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		**0.73**	J	ND (1.0)		ND (1.0)		ND (1.0)	
1,4-Dichlorobenzene	75	ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)	UJ	ND (1.0)		ND (1.0)		ND (1.0)	
cis-1,2-Dichloroethene	70	ND (1.0)		**0.58**	J	**1.1**		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		**3.4**		**0.95**	J	**0.66**	J	**60.3**	J	ND (1.0)		ND (1.0)		ND (1.0)	
Trichloroethene	5	**6.3**		ND (1.0)		**1.2**		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		**1.4**	J	**1.7**	J	**24.4**	J	ND (1.0)		**0.99**	J	**2.5**	
1,2,4-Trimethylbenzene[1]	15[2]	ND (2.0)		ND (2.0)		ND (2.0)		ND (2.0)		ND (2.0)		ND (2.0)		ND (2.0)		ND (2.0)		ND (2.0)		ND (2.0)		ND (2.0)	UJ	ND (2.0)		ND (2.0)		ND (2.0)	
Vinyl chloride	2	ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		**9.1**		**1.4**		ND (1.0)		**13.5**	J	ND (1.0)		ND (1.0)		ND (1.0)	
Polychlorinated Biphenyls (Method 8082A) (µg/L)																													
Aroclor 1260	0.5	ND (0.33)		ND (0.33)		ND (0.33)	UJ	ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)	
Metals (Method 6010) (µg/L)																													
Arsenic	10	**26.9**		**1.2**	J	ND (3.0)		ND (3.0)		**3.2**		**1.9**	J	**9.5**		**40.6**		**1.4**	J	**9.1**		**2.2**	J	ND (3.0)		ND (3.0)		ND (3.0)	
Iron		**62.3**	J	**247**		**38.2**	J	ND (100)		**1140**		**167**		**333**		**3850**		**343**		**54.1**	J	**342**		**327**		**58.9**	J	ND (100)	
Manganese	314*	ND (15)		**17.9**		**6.1**	J	ND (15)		**60.4**		**4.4**	J	**4.4**	J	**105**		**7.7**	J	ND (15)		**266**		**97.9**		**2.6**	J	ND (15)	
Gases (Method RSK-175) (µg/L)																													
Methane		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Ethane		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Ethene		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Geochemistry Parameters (mg/L)																													
Alkalinity, Total as CaCO3		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Chloride		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Nitrogen, Ammonia		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Nitrogen, Nitrate		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Nitrogen, Nitrate + Nitrite		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Sulfate		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Sulfide		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Total Organic Carbon		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Dechlorinating Bacteria (Method qPCR) (cells/mL)																													
Dehalococcoides (DHC)		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
tceA Reductase (TCE)		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
BAV1 Vinyl Chloride Reductase (BVC)		-		-		-		-		-		-		-		-		-		-		-		-		-		-	
Vinyl Chloride Reductase (VCR)		-		-		-		-		-		-		-		-		-		-		-		-		-		-	

Table 5-3
Comparison of 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, and 2020 COC Exceedances
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Analyte	MCL or PRG (µg/L)	Well ID	2011 Concentration	2012 Concentration	2013 Concentration	2014 Concentration	2015 Concentration
Volatile Organics (µg/L)							
1,4-Dichlorobenzene	75	S03M57	458	531	869 J	348	153
		S03M64D1	NA	NA	NA	NA	NA
Benzene	5	S03M03	NE	NE	5.70	9.00 J	14.7 J
		S03M07	25.3 J	18.10	12.9	16.4	15.1 J
		S03M15	6.80	NE	NE	NE	NE
		S03M17	NE	5.00	12.7	18.6 J	8.30 J
		S03M18	58	115	28.8	115	149 J
		S03M41	NE	NE	8.50 J	8.40	11.4
		S03M50	8.90	NE	13.9	NE	38.9
		S03M57	317	503	632	611	518 J
		S03M64D1	25.3 J	27.9	22.8	22.9	18.5 J
		S03M64D2	14.5 J	13.1	11.1	8.70	8.80 J
Carbon Tetrachloride	5	S03M20	5.60	5.40	NE	NE	ND
		S03M72	NE	677	142	NE	ND
Chlorobenzene	100	S03M03	NE	NE	1,060	1,310	1,400 J
		S03M07	2,300 J	1,280	1,050	1,620 J	1,280 J
		S03M14	NE	120	NE	NE	NE
		S03M15	101	NE	NE	NE	NE
		S03M17	257	378	1,040	1,490	744 J
		S03M18	2,810	3,770	1,510	3,310	3,410 J
		S03M41	330	232	586 J	684	775
		S03M50	NE	NE	NE	ND	103
		S03M57	4,630	5,910	8,760 J	3,880 J	2,710 J
		S03M64D1	1,100	1,090	789 J	813	517 J
		S03M64D2	717 J	436	361	252.00	285 J
cis-1,2-Dichloroethene	70	S03M15	323	NE	NE	NE	257 J
		S03M17	NE	83.9	253	102	232 J
		S03M18	120	NE	251	406	415 J
		S03M41	262	1,020	2,990 J	691	808
		S03M44	NE	NE	185	NE	76.1
		S03M48	108	NE	NE	NE	NE
		S03M49	430	306	203	157	1,720
		S03M50	25,500	11,500	36,300	65,000	70,200
		S03M63D2	182 L	125	92.6	82.2	76.9 J
		S03M63D3	156	129	78.0	81.5	75.7
		S03M64D1	137 J	105	70.3	NE	NE
		S03M64D3	NE	75.1	NE	NE	NE
		S03M70	NE	NE	NE	145	NE
		S03M73D1	NE	88.8	NE	174 J	NE
Trichloroethene	5	S03M01	7.10	NE	NE	NE	NE
		S03M03	NE	NE	NE	7.50	NE
		S03M17	15.6	NE	NE	NE	NE
		S03M18	5.10	38.8	6.60	53.2	16.4 J
		S03M41	159	512	1,330 J	287	482
		S03M44	13.7	8.30	32.7	NE	10.2
		S03M45	13.2 J	NE	NE	NE	NE
		S03M46	51.2	23.2	9.10	6.00	6.20
		S03M48	166	14.6	26.5	20.0	NE
		S03M49	27.1	38.9	11.0	7.20	51.9
		S03M50	NE	5.40	NE	NE	9.00
		S03M62S	10.1	8.70	NE	NE	NE
		S03M63D1	162 J	109 J	67.9 J	46.7	24.5 J
		S03M63D2	609 L	395	373 J	271 J	261 J
		S03M63D3	714	366	313	304	198
		S03M64D1	57.2 J	59.2	36.0	30.3 J	17.3 J
		S03M64D2	20.2 J	14.2	11.8	7.50	9.10 J
		S03M64D3	32.1	278	55.8	97.7 J	158
		S03M66D1	11.0	6.10	NE	NE	NE
		S03M66D2	20.3	25.2	NE	14.7	11.2
		S03M67D1	8.00	6.90	NE	NE	NE
		S03M67D2	8.30	11.5	NE	NE	NE
		S03M69D2	NE	NE	7.70	NE	NE
		S03M70	NE	58.5	NE	NE	NE
		S03M71	NE	5.50	7.40	6.90	NE
		S03M73D1	NE	37.8	NE	NE	NE
		S03M73D2	NE	19.3	NE	NE	NE
		DD-7D	10.0	5.40	9.10 J	7.10	5.30
Vinyl Chloride	2	S03M03	NE	NE	3.50	7.50	2.10
		S03M07	NE	2.90	3.20	NE	NE
		S03M14	NE	NE	2.30 J	NE	NE
		S03M15	252	2.20	8.30	161 J	192 J
		S03M16	NE	6.40	5.10	NE	2.80
		S03M17	13.0	16.6	172	268	130 J
		S03M18	75.3	25.4	39.2	20.1	31.7 J
		S03M41	50.2	97.0	98.7 J	69.0	70.2
		S03M44	NE	NE	18.6	NE	2.20
		S03M45	NE	NE	4.10	NE	NE
		S03M48	2.30	ND	NE	NE	NE
		S03M49	NA	NA	NA	NA	NA
		S03M50	2,340	547	637	3,100	2,660
		S03M54	28.9	15.7	NE	14.60	9.30
		S03M63D1	15.9 J	9.20 J	6.50 J	3.90	2.80 J
		S03M63D2	28.8 L	13.5	12.80 J	8.20 J	9.20 J
		S03M63D3	30.7	14.7	11.30	9.80	9.90
		S03M64D1	75.5 J	57.3	55.40	57.4	46.0 J
		S03M64D2	24.1 J	13.9	14.10	10.2	13.7 J
		S03M64D3	6.30	26.5	13.80	15.2 J	22.8
		S03M70	NA	NA	NA	NA	NA
		S03M71	NE	14.7	11.50	9.50	8.30
		S03M73D1	NE	55.0	NE	84.6 J	18.3
		S03M73D2	NE	24.5	20.50	NE	NE

Table 5-3
Comparison of 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, and 2020 COC Exceedances
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Analyte	MCL or PRG (µg/L)	Well ID	2016 Concentration	2017 Concentration	2018 Concentration	2019 Concentration	2020 Concentration
Volatile Organics (µg/L)							
1,4-Dichlorobenzene	75	S03M57	168	NE	114	NE	NE
		S03M64D1	NA	134	NE	NE	85.1
Benzene	5	S03M03	9.70	9.60	8.60	6.20	8.9
		S03M07	15.5	16.2	12.0	13.4	15.3
		S03M15	NE	NE	NE	NE	NE
		S03M17	8.30	17.1	10.7	10.8	7.8
		S03M18	14.6	144	82.1	204	107
		S03M41	5.40 J	10.6	8.30	6.6	24
		S03M50	40.4	18.9	13.9	17.8	12.3 J
		S03M57	515	191	585	228	384
		S03M64D1	26.2	14.8	13.7	13.8	15.4
		S03M64D2	8.10	5.00	NE	NE	NE
Carbon Tetrachloride	5	S03M20	ND	ND	ND	ND	ND
		S03M72	ND	ND	ND	ND	ND
Chlorobenzene	100	S03M03	1,280	863	1,060	824	1,020
		S03M07	1,850	986	999	1,080	961
		S03M14	NE	NE	NE	NE	NE
		S03M15	NE	NE	NE	NE	NE
		S03M17	872	1,580	932	899	935
		S03M18	1,170	3,030	2,530	2,500	1,450
		S03M41	909	1,170	976	504	612
		S03M50	128	188	148	143	NE
		S03M57	2,400	907	2,020	625	1,150
		S03M64D1	1,550	780	458	513	561
		S03M64D2	275	149	NE	NE	NE
cis-1,2-Dichloroethene	70	S03M15	122	NE	NE	NE	NE
		S03M17	199	NE	ND	ND	NE
		S03M18	NE	227	120	198	224
		S03M41	432	299	527	144	2,220
		S03M44	NE	NE	NE	NE	NE
		S03M48	NE	NE	NE	NE	NE
		S03M49	1,690	111	93.7	NE	NE
		S03M50	63,600	NE	2,240	7,300	7,280
		S03M63D2	78.2	NE	NE	NE	NE
		S03M63D3	NE	NE	NE	NE	NE
		S03M64D1	NE	NE	NE	NE	NE
		S03M64D3	143	NA(2)	NA(2)	NA(2)	NA(2)
		S03M70	NE	NE	NE	NE	NE
		S03M73D1	70.5	79.5	NE	129	NE
Trichloroethene	5	S03M01	NE	ND	ND	ND	ND
		S03M03	NE	NE	ND	ND	ND
		S03M17	NE	ND	ND	ND	ND
		S03M18	7.60 J	23.8	ND	13.6 J	50.3
		S03M41	65.4	22.1	24.3	NE	NE
		S03M44	10.0	NE	NE	NE	10
		S03M45	NE	ND	NE	NE	NE
		S03M46	NE	NE	NE	NE	NE
		S03M48	NE	NE	NE	NE	NE
		S03M49	60.7	5.4	NE	NE	NE
		S03M50	NE	ND	ND	ND	ND
		S03M62S	NE	NE	NE	NE	ND
		S03M63D1	20.2	18.0	11.8	12.3	13.3
		S03M63D2	237	89.9	75.0	62.5	72.6
		S03M63D3	177	114	138	87.4	92.2
		S03M64D1	33.9	14.1	10.2	8.4	7.5
		S03M64D2	11.2	8.8	5.30	NE	NE
		S03M64D3	160	NA(2)	NA(2)	NA(2)	NA(2)
		S03M66D1	NE	NE	NE	NE	NE
		S03M66D2	11.4	8.2	5.70	5.70	6.3
		S03M67D1	NE	NE	ND	ND	ND
		S03M67D2	NE	NE	NE	NE	NE
		S03M69D2	NE	ND	ND	ND	ND
		S03M70	NE	ND	NE	ND	ND
		S03M71	5.40	NE	NE	NE	NE
		S03M73D1	37.4	22.1	NE	40.3	24.4 J
		S03M73D2	NE	ND	ND	NE	ND
		DD-7D	6.80	6.20	NE	NE	NE
Vinyl Chloride	2	S03M03	NE	NE	ND	ND	NE
		S03M07	NE	ND	ND	ND	ND
		S03M14	NE	NE	ND	NE	ND
		S03M15	178	NE	2.50	NE	NE
		S03M16	NE	2.00	ND	ND	ND
		S03M17	121	115	ND	6.2	49
		S03M18	3.70 J	24.2	24.6	26.4	11.5
		S03M41	34.9	341	413	238	1,430
		S03M44	2.00	ND	ND	ND	ND
		S03M45	NE	ND	ND	ND	ND
		S03M48	NE	NE	7.00	6.90	ND
		S03M49	NA	115	115	26.4	ND
		S03M50	2,390	5.30	782	4,830	2,570
		S03M54	5.70	3.70	2.90	4.10	3.7
		S03M63D1	NE	NE	NE	NE	NE
		S03M63D2	10.2	5.5	5.40	6.30	5.1
		S03M63D3	8.90	7.40	6.80	6.50	6
		S03M64D1	53.5	16.6	23.6	21.4	16.2
		S03M64D2	13.7 J	10.5	9.30	8.2	3 J
		S03M64D3	53.5	NA(2)	NA(2)	NA(2)	NA(2)
		S03M70	NA	51.1	27.8	37.6	9.1
		S03M71	8.70	7.80	7.50	5.40	NE
		S03M73D1	34.8	26.6	21.3	44.8	13.5 J
		S03M73D2	NE	ND	NE	NE	ND

Table 5-3
Comparison of 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, and 2020 COC Exceedances
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Analyte	MCL or PRG (µg/L)	Well ID	2011 Concentration	2012 Concentration	2013 Concentration	2014 Concentration	2015 Concentration
PCBs (µg/L)							
Aroclor-1260	0.5	S03M03	ND	ND	ND	NE	1.80
		S03M16	ND	ND	ND	ND	1.20
		S03M17	0.77 J	8.50	8.30 J	7.10 J	56.5
		S03M18	18.0	ND	15.7 J	17.1 J	3.10
		S03M41	NE	0.85 J	22.8	1.40 J	0.73
		S03M49	NE	NE	NE	NE	NE
		S03M57	43.5	10.10 J	17.6 J	17.3 J	17.1 J
		S03M64D1	NE	0.78 J	2.30 J	1.00 J	2.30
		S03M64D2	NE	NE	13.0 J	2.20 J	31.5
		S03M64D3	NE	NE	4.20 J	1.90 J	ND
Inorganics - Total Metals (µg/L)							
Arsenic	10	S03M03	NE	NA	NA[(1)]	13.0	13.0
		S03M07	NE	NA	NA[(1)]	24.0	20.0
		S03M14	NE	NA	NA[(1)]	26.0	25.0
		S03M15	NE	NA	NA[(1)]	16.0	16.0 J
		S03M17	NA	NA	NA	NA	NA
		S03M18	NE	NA	NA[(1)]	17.0	20.0
		S03M41	NA	NA	NA	NA	NA
		S03M45	NA	NA	NA	NA	NA
		S03M48	NA	NA	NA	NA	NA
		S03M63D2	NE	NA	NA[(1)]	11.0	NE
		S03M63D3	NE	NA	NA[(1)]	11.0	14.0
		S03M64D1	NE	NA	NA[(1)]	46.0	42.0
		S03M64D2	NE	NA	NA[(1)]	57.0	60.0
		S03M64D3	NE	NA	NA[(1)]	32.0	10.0
		S03M65D	NE	NA	NA[(1)]	16.0	20.0
		S03M66D1	NE	NA	NA[(1)]	29.0	33.0 J
		S03M66D2	15.0	NA	NA[(1)]	27.0	29.0 J
		S03M69D2	NA	NA	NA	NA	NA
		S03M70	NA	NE	NA[(1)]	NE	18.0
		S03M71	NA	NA	NA[(1)]	NE	13.0
		S03M72	NA	NA	NA[(1)]	31.0	20.0
Manganese	314*	S03M01	NA	NA	NA	NA	NA
		S03M03	NE	NA	NA[(1)]	320	NE
		S03M14	NA	NA	NA	NA	NA
		S03M16	NA	NA	NA	NA	NA
		S03M17	510	NA	NA[(1)]	NE	NE
		S03M18	NE	NA	NA[(1)]	800	630
		S03M41	NE	NA	NA[(1)]	340	320
		S03M44	NE	NA	NA[(1)]	320	430
		S03M45	NA	NA	NA	NA	NA
		S03M48	650	NA	NA[(1)]	NE	1,500
		S03M49	720	NA	NA[(1)]	NE	NE
		S03M50	500	NA	NA[(1)]	NE	NE
		S03M51	NA	170	NA[(1)]	NE	NE
		S03M52	NA	NA	NA[(1)]	4,500	NE
		S03M54	1,300	NA	NA[(1)]	1,100	1,400
		S03M64D3	NE	NA	NA[(1)]	690	NE
		S03M73D1	NA	NA	NA	NA	NA

Table 5-3
Comparison of 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, and 2020 COC Exceedances
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Analyte	MCL or PRG (µg/L)	Well ID	2016 Concentration	2017 Concentration	2018 Concentration	2019 Concentration	2020 Concentration
PCBs (µg/L)							
Aroclor-1260	0.5	S03M03	NE	0.96	0.69	0.84	ND
		S03M16	NE	0.54 J	ND	ND	ND
		S03M17	9.10	6.60	4.40	3.10	7.5
		S03M18	NE	4.40	NE	0.76	ND
		S03M41	NE	NE	ND	NE	NE
		S03M49	NE	NE	NE	NE	0.55
		S03M57	4.70	47.4 J	9.70	2.20	0.59
		S03M64D1	NE	NE	ND	NE	ND
		S03M64D2	2.40	1.50	ND	0.62	NE
		S03M64D3	ND	NA(2)	NA(2)	NA(2)	NA(2)
Inorganics - Total Metals (µg/L)							
Arsenic	10	S03M03	11.0	30.5	21.0	19.2	11.8
		S03M07	19.0	28.3	19.1	23.8	19.8
		S03M14	19.0	54.0	50.9	63.0	20.2
		S03M15	15.0	18.9	17.3	16.8	12.3
		S03M17	NA	NA	NA	33.2	NE
		S03M18	13.0	47.8	64.8	47.9	41.2
		S03M41	NA	17.2	14.6	NE	NE
		S03M45	NA	309	NE	NE	NE
		S03M48	NA	11.5	ND	NE	NE
		S03M63D2	NE	NE	ND	NE	NE
		S03M63D3	17.0	NE	ND	NE	NE
		S03M64D1	39.0	16.4	15.3	12.5	NE
		S03M64D2	58.0	27.2	27.1	28.9	28.8
		S03M64D3	NE	NA(2)	NA(2)	NA(2)	NA(2)
		S03M65D	13.0	11.5	12.8	11.5	17.3
		S03M66D1	30.0	29.5	29.0	31.2	32.6
		S03M66D2	29.0	26.5	25.6	26.6	26.9
		S03M69D2	NA	NA	10.6	NE	NE
		S03M70	18.0	20.4	23.1	22.0	40.6
		S03M71	12.0	13.5	13.3	NE	NE
		S03M72	13.0	11.0	NE	10.7	NE
Manganese	314*	S03M01	NA	454	ND	ND	NE
		S03M03	NE	393	NE	NE	NE
		S03M14	NA	484	NE	317	NE
		S03M16	NA	411	NE	NE	NE
		S03M17	NE	NE	785	652	684
		S03M18	NE	NE	NE	354	NE
		S03M41	NE	NE	NE	NE	NE
		S03M44	NE	1,610	2,040	NE	NE
		S03M45	NA	2,130	NE	NE	NE
		S03M48	1,200	696	662	605	NE
		S03M49	NE	1,010	684	NE	NE
		S03M50	NE	405	NE	NE	NE
		S03M51	NE	NE	NE	NE	NE
		S03M52	770	388	NE	NE	NE
		S03M54	1,200	1,510	768	488	643
		S03M64D3	NE	NA(2)	NA(2)	NA(2)	NA(2)
		S03M73D1	NA	351	376	366	NE

Notes:

Red shaded cells indicate concentration increases between the previous and current years

* Indicates a PRG not MCL

NA(1) - Not sampled because Navy removed from sampling plan in 2013

NA(2) - Not sampled due to well being compromised during sampling event

NA - Not Applicable

ND - Not Detected

NE - No exceedance of respective MCL or PRG

µg/L - micrograms per liter

MCL - Federal Maximum Contaminant Level (USEPA, 2009)

PCBs - Polychlorinated Biphenyls

PRG - Preliminary Remediation Goal, as established in Site 3 Record of Decision (Navy, 2004)

J - Estimated concentration

L - Analyte is present. Actual value is expected to be higher.

Table 5-4
Water Quality and Natural Attenuation Parameters – June 2020
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well Identification	Date	Time	pH (SU)	Specific Conductance (mS/cm)	Temperature (°C)	Dissolved Oxygen (ppm)	ORP (mV)	Turbidity (NTU)
S03M01	07/01/20	11:30	6.98	0.797	13.50	8.09	103.9	5.81
S03M02	06/29/20	14:15	7.52	0.824	17.15	11.38	97.4	10.20
S03M03	06/29/20	19:40	6.91	0.579	15.54	1.99	-106.3	9.81
S03M07	06/29/20	16:00	7.31	0.582	20.94	5.40	-89.6	14.61
S03M13	06/30/20	9:30	7.00	0.385	16.66	1.39	-84.0	0.78
S03M14	06/24/20	14:10	7.10	0.339	18.02	1.68	-28.8	9.84
S03M15	06/30/20	11:45	7.65	0.916	21.51	2.88	-114.5	2.35
S03M16	06/23/20	17:45	6.60	0.417	17.91	6.97	70.9	35.2
S03M17	06/24/20	10:05	6.42	0.627	17.91	0.66	-50.9	5.33
S03M18	06/24/20	10:35	7.02	0.397	20.18	0.92	-112.5	2.31
S03M20	06/24/20	17:15	7.45	0.123	17.46	6.05	111.3	12.0
S03M21	06/29/20	17:50	7.22	0.429	17.29	9.80	111.5	8.36
S03M22	06/25/20	16:10	6.04	0.520	16.94	3.23	83.0	39.7
S03M41	06/25/20	12:45	6.78	0.467	18.82	0.85	-66.0	29.7
S03M44	06/30/20	13:50	7.24	0.752	17.16	5.64	77.6	5.64
S03M45	06/30/20	9:50	7.69	0.488	16.14	2.60	94.3	2.68
S03M46	06/30/20	15:00	7.24	0.956	18.79	1.70	84.4	5.14
S03M48	06/25/20	13:45	7.00	0.717	20.30	3.98	127.3	9.86
S03M49	06/25/20	16:31	6.86	0.774	16.49	8.10	5.2	43.1
S03M50	06/25/20	9:30	6.92	1.092	17.01	3.08	-27.0	51.9
S03M51	06/25/20	18:30	7.71	0.383	17.27	12.04	134.4	46.7
S03M52	06/25/20	18:10	7.01	0.636	16.74	1.62	134.3	8.79
S03M54	06/24/20	14:35	7.72	0.694	23.25	0.65	-189.8	5.42
S03M57	06/23/20	17:45	7.09	0.388	19.80	0.88	-84.8	3.05
S03M61S*	---	---	---	---	---	---	---	---
S03M62S	06/29/20	18:30	7.07	0.466	16.04	7.35	73.9	1.50
S03M63D1	06/26/20	11:10	12.07	4.517	17.17	1.69	74.4	7.00
S03M63D2	06/26/20	9:05	11.68	2.119	17.45	1.23	121.6	2.45
S03M63D3	06/25/20	10:37	11.54	1.412	18.00	3.99	39.2	29.8
S03M64D1	06/24/20	17:10	12.15	5.124	19.84	1.90	-37.8	7.61
S03M64D2	06/26/20	12:55	11.56	2.016	18.51	0.65	83.6	9.57
S03M64D3**	---	---	---	---	---	---	---	---
S03M65D	06/29/20	13:30	9.46	0.300	17.80	1.28	-145.8	7.88
S03M66D1	06/30/20	11:15	11.10	1.378	18.15	1.77	89.4	8.44
S03M66D2	06/30/20	13:05	11.20	1.512	19.17	1.65	18.7	8.52
S03M67D1	07/01/20	11:20	7.09	0.486	17.33	1.60	97.6	4.81
S03M67D2	07/01/20	12:45	6.90	0.404	16.44	0.86	2.1	2.80
S03M68D1	06/30/20	15:45	6.99	0.615	16.06	1.40	60.4	6.25
S03M68D2	06/30/20	17:45	6.95	0.674	15.69	1.08	-45.0	4.02
S03M69D1	06/30/20	18:45	7.23	0.546	19.03	3.80	-46.1	2.80
S03M69D2	06/30/20	17:05	7.27	0.584	15.36	1.67	-27.2	2.61
S03M70	06/29/20	16:55	6.70	0.741	18.19	0.91	-70.5	6.03
S03M71	06/29/20	14:50	8.59	0.230	21.07	1.32	-37.2	6.76
S03M72	06/29/20	12:55	12.00	3.067	22.09	0.89	-40.0	0.35
S03M73D1	06/26/20	12:00	7.10	0.491	17.94	2.27	-65.0	8.57
S03M73D2	06/26/20	10:35	7.50	0.373	19.29	11.64	-24.3	10.30
DD-1	07/01/20	9:25	6.94	0.257	14.39	3.38	146.0	6.68
DD-7D	07/01/20	12:40	7.07	0.476	15.20	5.30	104.1	5.69
Natural Attenuation Screening Protocols	NA	NA	5 < pH < 9	NA	> 20 °C	< 0.5 mg/L Favorable > 5.0 mg/L Unfavorable	< 50 Favorable >100 Unfavorable	NA

Notes:
SU - standard unit
mS/cm - millisiemens per centimeter
°C - degrees Celsius
ppm - parts per million
mV - millivolts
ORP - oxidation reduction potential
NA - Not Applicable
NTU - nephelometric turbidity units
*Lack of sufficient water for sampling
**Well was compromised during sampling event

Table 6-1
Summary of Mann-Kendall Trend Analysis – Total VOCs
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location	N	Number of Detected Concentrations	S	p-value	Test Statistic	Alpha=0.20		Alpha = 0.10		Alpha = 0.05	
						Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?
Former Burn Pit #1 – Source Area											
S03M48	14	14	-53	0.00221	-53	17	Significant Downward Trend	25	Significant Downward Trend	31	Significant Downward Trend
S03M50	17	17	12	0.325	12	22	No Trend	34	No Trend	42	No Trend
S03M54	19	19	-127	5.21E-06	-127	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
Former Burn Pit #1 Plume											
S03M49	16	16	-42	0.0325	-42	20	Significant Downward Trend	30	Significant Downward Trend	38	Significant Downward Trend
S03M52	11	7	6	0.224	6	13	Significant Upward Trend	19	No Trend	23	No Trend
Former Burn Pit #2 – Source Area											
S03M07	13	13	-40	0.00867	-40	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M15	13	13	-10	0.291	-10	16	No Trend	24	No Trend	28	No Trend
S03M18	19	19	-57	0.025	-57	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M41	14	14	-21	0.137	-21	17	Significant Downward Trend	25	No Trend	31	No Trend
S03M57	11	11	-39	0.00155	-39	13	Significant Downward Trend	19	Significant Downward Trend	23	Significant Downward Trend
Former Burn Pit #2 Plume											
S03M14	13	13	-30	0.0384	-30	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M17	19	19	-29	0.164	-29	27	Significant Downward Trend	39	No Trend	59	No Trend
S03M44	19	19	-51	0.0401	-51	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M45	17	17	-70	0.00224	-70	22	Significant Downward Trend	34	Significant Downward Trend	42	Significant Downward Trend
S03M46	19	19	-145	2.35E-07	-145	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M62S	13	12	-38	0.0056	-38	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
Plume Fringe											
S03M01	13	10	-27	0.01	-27	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M02	13	12	-44	0.0016	-44	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M13	13	10	2	0.464	2	16	No Trend	24	No Trend	28	No Trend
S03M16	19	19	-97	3.92E-04	-97	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M20	17	13	-56	3.96E-04	-56	22	Significant Downward Trend	34	Significant Downward Trend	42	Significant Downward Trend
S03M21	13	10	-21	0.0368	-21	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M22	18	18	-113	1.11E-05	-113	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
S03M51	11	11	-8	0.292	-8	13	No Trend	19	No Trend	23	No Trend
S03M61S	Not Sampled										
Site 9											
DD-1	13	13	-28	0.0498	-28	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
DD-7D	13	13	-54	6.11E-04	-54	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend

Notes:
If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
N: Sample Size S: Kendall S Statistic
NA: Test is not applicable, there are less than four samples.
ND: Test is not applicable, there are less than two detected samples.
June 2020 Mann Kendall analysis based solely on ROD-defined VOC COCs
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.

Alpha 0.2 = 80% Confidence level
Alpha 0.1 = 90% Confidence level
Alpha 0.05 = 95% Confidence level

Table 6-2
Summary of Mann-Kendall Trend Analysis – Trichloroethene
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location	N	Number of Detected Concentrations	S	p-value	Test Statistic	Alpha=0.20		Alpha = 0.10		Alpha = 0.05	
						Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?
Former Burn Pit #1 – Source Area											
S03M48	14	14	-69	9.85E-05	-69	17	Significant Downward Trend	25	Significant Downward Trend	31	Significant Downward Trend
Former Burn Pit #1 Plume											
S03M49	16	16	-65	0.00196	-65	20	Significant Downward Trend	30	Significant Downward Trend	38	Significant Downward Trend
S03M50	17	11	-68	2.85E-03	-68	22	Significant Downward Trend	34	Significant Downward Trend	42	Significant Downward Trend
S03M54	19	14	-96	4.14E-04	-96	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
Former Burn Pit #2 – Source Area											
S03M41	14	14	-63	3.44E-04	-63	17	Significant Downward Trend	25	Significant Downward Trend	31	Significant Downward Trend
Former Burn Pit #2 Plume											
S03M17	19	12	-95	4.72E-04	-95	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M18	19	18	-83	0.0021	-83	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M44	19	19	-95	4.96E-04	-95	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M46	19	19	-149	1.12E-07	-149	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M62S	13	12	-47	0.0025	-47	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
Plume Fringe											
S03M01	13	8	-40	0.007	-40	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M02	13	11	-56	3.79E-04	-56	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M07	13	4	19	0.135	19	16	Significant Upward Trend	24	No Trend	28	No Trend
S03M13	13	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M14	13	8	-37	0.0135	-37	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M15	13	2	2	0.473	2	16	No Trend	24	No Trend	28	No Trend
S03M16	19	18	-50	0.0431	-50	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M20	17	3	-15	0.274	-15	22	No Trend	34	No Trend	42	No Trend
S03M21	13	9	-45	3.44E-03	-45	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M22	18	17	-113	1.05E-05	-113	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
S03M45	17	16	-96	4.55E-05	-96	22	Significant Downward Trend	34	Significant Downward Trend	42	Significant Downward Trend
S03M51	11	11	-13	0.174	-13	13	Significant Downward Trend	19	No Trend	23	No Trend
S03M52	11	2	0	***	0	13	No Trend	19	No Trend	23	No Trend
S03M57	11	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M61S	Not Sampled										
Site 9											
DD-1	13	13	-24	0.0803	-24	16	Significant Downward Trend	24	Significant Downward Trend	28	No Trend
DD-7D	13	13	-57	3.09E-04	-57	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend

Notes:
If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
N: Sample Size S: Kendall S Statistic
NA: Test is not applicable, there are less than four samples.
ND: Test is not applicable, there are less than two detected samples.
***: p-value is not applicable
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.

Alpha 0.2 = 80% Confidence level
Alpha 0.1 = 90% Confidence level
Alpha 0.05 = 95% Confidence level

Table 6-3
Summary of Mann-Kendall Trend Analysis – 1,2-Dichloroethylene (cis- or Total)
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location	N	Number of Detected Concentrations	S	p-value	Test Statistic	Alpha=0.20		Alpha = 0.10		Alpha = 0.05	
						Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?
Former Burn Pit #1 – Source Area											
S03M50	17	17	12	0.325	12	22	No Trend	34	No Trend	42	No Trend
Former Burn Pit #1 Plume											
S03M48	14	14	-48	0.00498	-48	17	Significant Downward Trend	25	Significant Downward Trend	31	Significant Downward Trend
S03M49	16	16	-40	0.0396	-40	20	Significant Downward Trend	30	Significant Downward Trend	38	Significant Downward Trend
S03M54	19	19	-111	5.94E-05	-111	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
Former Burn Pit #2 – Source Area											
S03M15	13	13	-26	0.0636	-26	16	Significant Downward Trend	24	Significant Downward Trend	28	No Trend
S03M18	19	18	-39	0.0918	-39	27	Significant Downward Trend	39	Significant Downward Trend	59	No Trend
S03M41	14	14	-5	0.413	-5	17	No Trend	25	No Trend	31	No Trend
Former Burn Pit #2 Plume											
S03M17	19	19	-101	2.34E-04	-101	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M44	19	19	-51	0.0401	-51	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M45	17	17	-66	0.00371	-66	22	Significant Downward Trend	34	Significant Downward Trend	42	Significant Downward Trend
Plume Fringe											
S03M01	13	7	-24	0.0769	-24	16	Significant Downward Trend	24	Significant Downward Trend	28	No Trend
S03M02	13	8	-22	0.0981	-22	16	Significant Downward Trend	24	No Trend	28	No Trend
S03M07	13	8	-43	0.00513	-43	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M13	13	6	6	0.378	6	16	No Trend	24	No Trend	28	No Trend
S03M14	13	13	-34	0.022	-34	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M16	19	19	-67	0.0104	-67	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M20	17	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M21	13	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M22	18	18	-104	4.73E-05	-104	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
S03M46	19	9	-70	0.00694	-70	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M51	11	11	-3	0.438	-3	13	No Trend	19	No Trend	23	No Trend
S03M52	11	2	2	0.467	2	13	No Trend	19	No Trend	23	No Trend
S03M57	11	7	-16	0.119	-16	13	Significant Downward Trend	19	No Trend	23	No Trend
S03M62S	13	5	-28	0.0455	-28	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M61S	Not Sampled										
Site 9											
DD-1	13	5	-3	0.45	-3	16	No Trend	24	No Trend	28	No Trend
DD-7D	13	10	-51	0.00112	-51	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend

Notes:
If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
N: Sample Size S: Kendall S Statistic
NA: Test is not applicable, there are less than four samples.
ND: Test is not applicable, there are less than two detected samples.
June 2020 Mann Kendall analysis based solely on cis-1,2-DCE analytical results
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.

Alpha 0.2 = 80% Confidence level
Alpha 0.1 = 90% Confidence level
Alpha 0.05 = 95% Confidence level

Table 6-4
Summary of Mann-Kendall Trend Analysis – Vinyl Chloride
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location	N	Number of Detected Concentrations	S	p-value	Test Statistic	Alpha=0.20		Alpha = 0.10		Alpha = 0.05	
						Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?
Former Burn Pit #1 – Source Area											
S03M50	17	16	30	0.116	30	22	Significant Upward Trend	34	No Trend	42	No Trend
Former Burn Pit #1 Plume											
S03M48	14	7	30	0.0529	30	17	Significant Upward Trend	25	Significant Upward Trend	31	Significant Upward Trend
S03M54	19	19	-97	3.86E-04	-97	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
Former Burn Pit #2 – Source Area											
S03M15	13	13	-14	0.214	-14	16	No Trend	24	No Trend	28	No Trend
S03M18	19	15	-90	9.18E-04	-90	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
Former Burn Pit #2 Plume											
S03M17	19	16	11	0.363	11	27	No Trend	39	No Trend	59	No Trend
S03M41	14	14	23	0.114	23	17	Significant Upward Trend	25	No Trend	31	No Trend
Plume Fringe											
S03M01	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M02	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M07	13	8	-37	0.0139	-37	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M13	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M14	13	10	-21	0.11	-21	16	Significant Downward Trend	24	No Trend	28	No Trend
S03M16	19	16	-74	0.00513	-74	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M20	17	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M21	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M22	18	4	-47	0.0357	-47	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
S03M44	19	9	-49	0.0447	-49	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M45	17	3	-56	0.00973	-56	22	Significant Downward Trend	34	Significant Downward Trend	42	Significant Downward Trend
S03M46	19	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M49	16	8	8	0.376	8	20	No Trend	30	No Trend	38	No Trend
S03M51	11	2	7	0.311	7	13	No Trend	19	No Trend	23	No Trend
S03M52	11	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M57	11	6	-2	0.468	-2	13	No Trend	19	No Trend	23	No Trend
S03M61S	Not Sampled										
S03M62S	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Site 9											
DD-1	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
DD-7D	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
N: Sample Size S: Kendall S Statistic
NA: Test is not applicable, there are less than four samples.
ND: Test is not applicable, there are less than two detected samples.
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.

Alpha 0.2 = 80% Confidence level
Alpha 0.1 = 90% Confidence level
Alpha 0.05 = 95% Confidence level

Table 6-5
Summary of Mann-Kendall Trend Analysis – Chlorobenzene
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location	N	Number of Detected Concentrations	S	p-value	Test Statistic	Alpha=0.20		Alpha = 0.10		Alpha = 0.05	
						Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?
Former Burn Pit #2 – Source Area											
S03M07	13	12	-30	0.0384	-30	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M18	19	19	-57	0.025	-57	27	Significant Downward Trend	39	Significant Downward Trend	59	Significant Downward Trend
S03M57	11	10	-29	0.0146	-29	13	Significant Downward Trend	19	Significant Downward Trend	23	Significant Downward Trend
Former Burn Pit #2 Plume											
S03M14	13	12	-18	0.15	-18	16	Significant Downward Trend	24	No Trend	28	No Trend
S03M15	13	13	20	0.123	20	16	Significant Upward Trend	24	No Trend	28	No Trend
S03M17	19	19	19	0.264	19	27	No Trend	39	No Trend	59	No Trend
S03M41	14	14	-13	0.256	-13	17	No Trend	25	No Trend	31	No Trend
Plume Fringe											
S03M01	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M02	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M13	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M16	19	14	-44	0.0658	-44	27	Significant Downward Trend	39	Significant Downward Trend	59	No Trend
S03M20	17	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M21	13	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M22	18	2	-59	0.0107	-59	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
S03M44	19	10	-12	0.348	-12	27	No Trend	39	No Trend	59	No Trend
S03M45	17	4	-53	0.0136	-53	22	Significant Downward Trend	34	Significant Downward Trend	42	Significant Downward Trend
S03M46	19	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M48	14	5	-1	0.5	-1	17	No Trend	25	No Trend	31	No Trend
S03M49	16	5	-18	0.218	-18	20	No Trend	30	No Trend	38	No Trend
S03M50	17	12	20	0.217	20	22	No Trend	34	No Trend	42	No Trend
S03M51	11	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M52	11	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M54	19	15	-42	0.075	-42	27	Significant Downward Trend	39	Significant Downward Trend	59	No Trend
S03M61S	Not Sampled										
S03M62S	13	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Site 9											
DD-1	13	2	17	0.147	17	16	Significant Upward Trend	24	No Trend	28	No Trend
DD-7D	13	0	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
N: Sample Size S: Kendall S Statistic
NA: Test is not applicable, there are less than four samples.
ND: Test is not applicable, there are less than two detected samples.
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.

Alpha 0.2 = 80% Confidence level
Alpha 0.1 = 90% Confidence level
Alpha 0.05 = 95% Confidence level

Table 6-6
Summary of Mann-Kendall Trend Analysis – Arsenic
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location	N	Number of Detected Concentrations	S	p-value	Test Statistic	Alpha=0.20		Alpha = 0.10		Alpha = 0.05	
						Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?
Former Burn Pit #2 – Source Area											
S03M07	12	12	-25	0.0495	-25	14	Significant Downward Trend	20	Significant Downward Trend	26	No Trend
Former Burn Pit #2 Plume											
S03M14	12	12	9	0.291	9	14	No Trend	20	No Trend	26	No Trend
S03M15	12	12	19	0.108	19	14	Significant Upward Trend	20	No Trend	26	No Trend
S03M17	18	15	2	0.485	2	25	No Trend	35	No Trend	45	No Trend
S03M18	18	17	35	0.0986	35	25	Significant Upward Trend	35	No Trend	45	No Trend
Plume Fringe											
S03M01	12	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M02	12	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M13	12	10	4	0.418	4	14	No Trend	20	No Trend	26	No Trend
S03M16	18	14	-55	0.0201	-55	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
S03M20	16	9	-32	0.0785	-32	20	Significant Downward Trend	30	Significant Downward Trend	38	No Trend
S03M21	12	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M22	17	3	-29	0.119	-29	22	Significant Downward Trend	34	No Trend	42	No Trend
S03M41	13	13	-2	0.476	-2	16	No Trend	24	No Trend	28	No Trend
S03M44	18	3	-36	0.0875	-36	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
S03M45	16	8	19	0.207	19	20	No Trend	30	No Trend	38	No Trend
S03M46	18	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
S03M48	13	7	16	0.175	16	16	Significant Upward Trend	24	No Trend	28	No Trend
S03M49	15	3	-19	0.179	-19	19	Significant Downward Trend	29	No Trend	35	No Trend
S03M50	16	6	9	0.358	9	20	No Trend	30	No Trend	38	No Trend
S03M51	9	2	9	0.185	9	10	No Trend	14	No Trend	18	No Trend
S03M52	10	4	4	0.39	4	11	No Trend	17	No Trend	21	No Trend
S03M54	18	12	-16	0.283	-16	25	No Trend	35	No Trend	45	No Trend
S03M57	10	8	-23	0.0245	-23	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend
S03M61S	Not Sampled										
S03M62S	12	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Site 9											
DD-1	12	2	-1	0.5	-1	14	No Trend	20	No Trend	26	No Trend
DD-7D	12	0	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
N: Sample Size S: Kendall S Statistic
NA: Test is not applicable, there are less than four samples.
ND: Test is not applicable, there are less than two detected samples.
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.

Alpha 0.2 = 80% Confidence level
Alpha 0.1 = 90% Confidence level
Alpha 0.05 = 95% Confidence level

Table 6-7
Summary of Mann-Kendall Trend Analysis – Manganese
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location	N	Number Detected Concentrations	S	p-value	Test Statistic	Alpha=0.20		Alpha = 0.10		Alpha = 0.05	
						Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?
Former Burn Pit #1 – Source Area											
S03M54	18	18	-75	0.00253	-75	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
Former Burn Pit #1 Plume											
S03M48	13	13	-24	0.0803	-24	16	Significant Downward Trend	24	Significant Downward Trend	28	No Trend
S03M49	15	15	-2	0.48	-2	19	No Trend	29	No Trend	35	No Trend
S03M50	16	15	-44	0.0264	-44	20	Significant Downward Trend	30	Significant Downward Trend	38	Significant Downward Trend
S03M52	10	10	-19	0.0537	-19	11	Significant Downward Trend	17	Significant Downward Trend	21	No Trend
Former Burn Pit #2 – Source Area											
S03M18	18	18	-121	2.66E-06	-121	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
Former Burn Pit #2 Plume											
S03M07	12	12	-55	1.03E-04	-55	14	Significant Downward Trend	20	Significant Downward Trend	26	Significant Downward Trend
S03M17	18	18	-57	0.017	-57	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
S03M41	13	13	-45	0.00358	-45	16	Significant Downward Trend	24	Significant Downward Trend	28	Significant Downward Trend
S03M57	10	10	-30	0.0046	-30	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend
Plume Fringe											
S03M01	12	9	-35	0.00972	-35	14	Significant Downward Trend	20	Significant Downward Trend	26	Significant Downward Trend
S03M02	12	8	39	0.004334	39	14	Significant Upward Trend	20	Significant Upward Trend	26	Significant Upward Trend
S03M13	12	10	40	0.0036	40	14	Significant Upward Trend	20	Significant Upward Trend	26	Significant Upward Trend
S03M14	12	12	-5	0.392	-5	14	No Trend	20	No Trend	26	No Trend
S03M15	12	12	-41	0.00299	-41	14	Significant Downward Trend	20	Significant Downward Trend	26	Significant Downward Trend
S03M16	18	18	-83	9.34E-04	-83	25	Significant Downward Trend	35	Significant Downward Trend	45	Significant Downward Trend
S03M20	16	14	16	0.25	16	20	No Trend	30	No Trend	38	No Trend
S03M21	12	8	23	0.0652	23	14	Significant Upward Trend	20	Significant Upward Trend	26	No Trend
S03M22	17	17	-42	0.0456	-42	22	Significant Downward Trend	34	Significant Downward Trend	42	Significant Downward Trend
S03M44	18	16	59	0.014	59	25	Significant Upward Trend	35	Significant Upward Trend	45	Significant Upward Trend
S03M45	16	13	-7	0.393	-7	20	No Trend	30	No Trend	38	No Trend
S03M46	18	6	4	0.455	4	25	No Trend	35	No Trend	45	No Trend
S03M51	9	9	-2	0.458	-2	10	No Trend	14	No Trend	18	No Trend
S03M61S	Not Sampled										
S03M62S	12	5	25	0.046	25	14	Significant Upward Trend	20	Significant Upward Trend	26	No Trend
Site 9											
DD-1	12	5	5	0.389	5	14	No Trend	20	No Trend	26	No Trend
DD-7D	12	7	0	***	0	14	No Trend	20	No Trend	26	No Trend

Notes:
If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
N: Sample Size S: Kendall S Statistic
NA: Test is not applicable, there are less than four samples.
ND: Test is not applicable, there are less than two detected samples.
***: p-value is not applicable
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.

Alpha 0.2 = 80% Confidence level
Alpha 0.1 = 90% Confidence level
Alpha 0.05 = 95% Confidence level

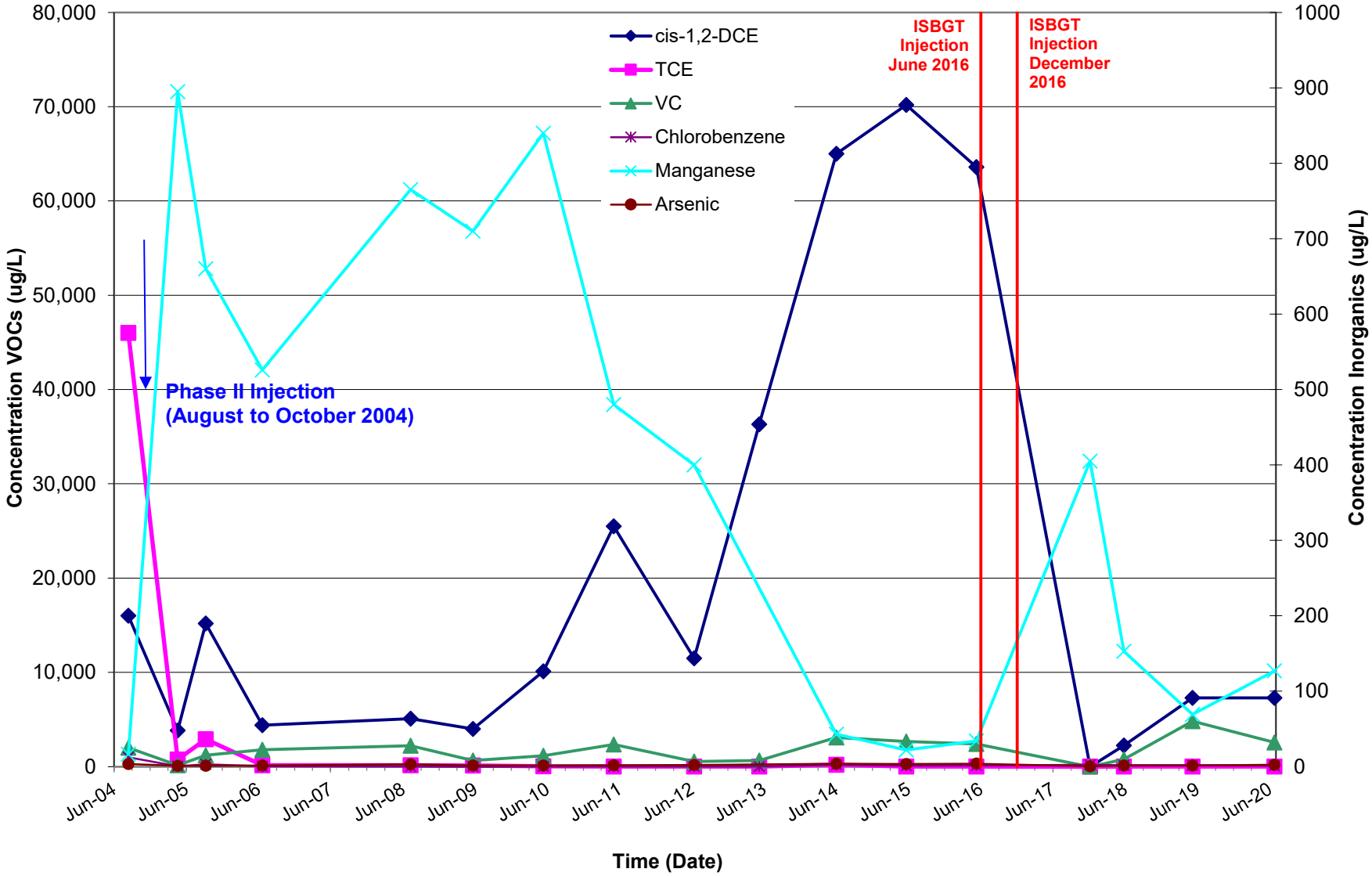
Table 6-8
Summary of Mann-Kendall Trend Analysis – Intermediate and Deep Wells
Site 3 – Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Location	Depth Interval	Mann-Kendall Trend at 80-percent Confidence Level					
		Trichloroethene	1,2-Dichloroethylene (Total)*	Vinyl Chloride	Chlorobenzene	Arsenic	Manganese
S03M63D1	Intermediate	Significant Downward Trend	Significant Downward Trend	Significant Downward Trend	No Trend	Significant Upward Trend	Significant Upward Trend
S03M63D2	Intermediate	Significant Downward Trend	Significant Downward Trend	Significant Downward Trend	No Trend	No Trend	No Trend
S03M63D3	Deep	Significant Downward Trend	Significant Downward Trend	Significant Downward Trend	No Trend	No Trend	No Trend
S03M64D1	Intermediate	Significant Downward Trend	Significant Downward Trend	Significant Downward Trend	Significant Downward Trend	Significant Downward Trend	Significant Upward Trend
S03M64D2	Intermediate	Significant Downward Trend	Significant Downward Trend	Significant Downward Trend	Significant Downward Trend	Significant Downward Trend	Significant Upward Trend
S03M70	Deep	Significant Downward Trend	Significant Downward Trend	Significant Upward Trend	Significant Upward Trend	Significant Upward Trend	Significant Upward Trend
S03M73D1	Intermediate	No Trend	No Trend	No Trend	Significant Downward Trend	Significant Upward Trend	Significant Upward Trend
S03M73D2	Deep	No Trend	Significant Downward Trend	Significant Downward Trend	No Trend	No Trend	No Trend

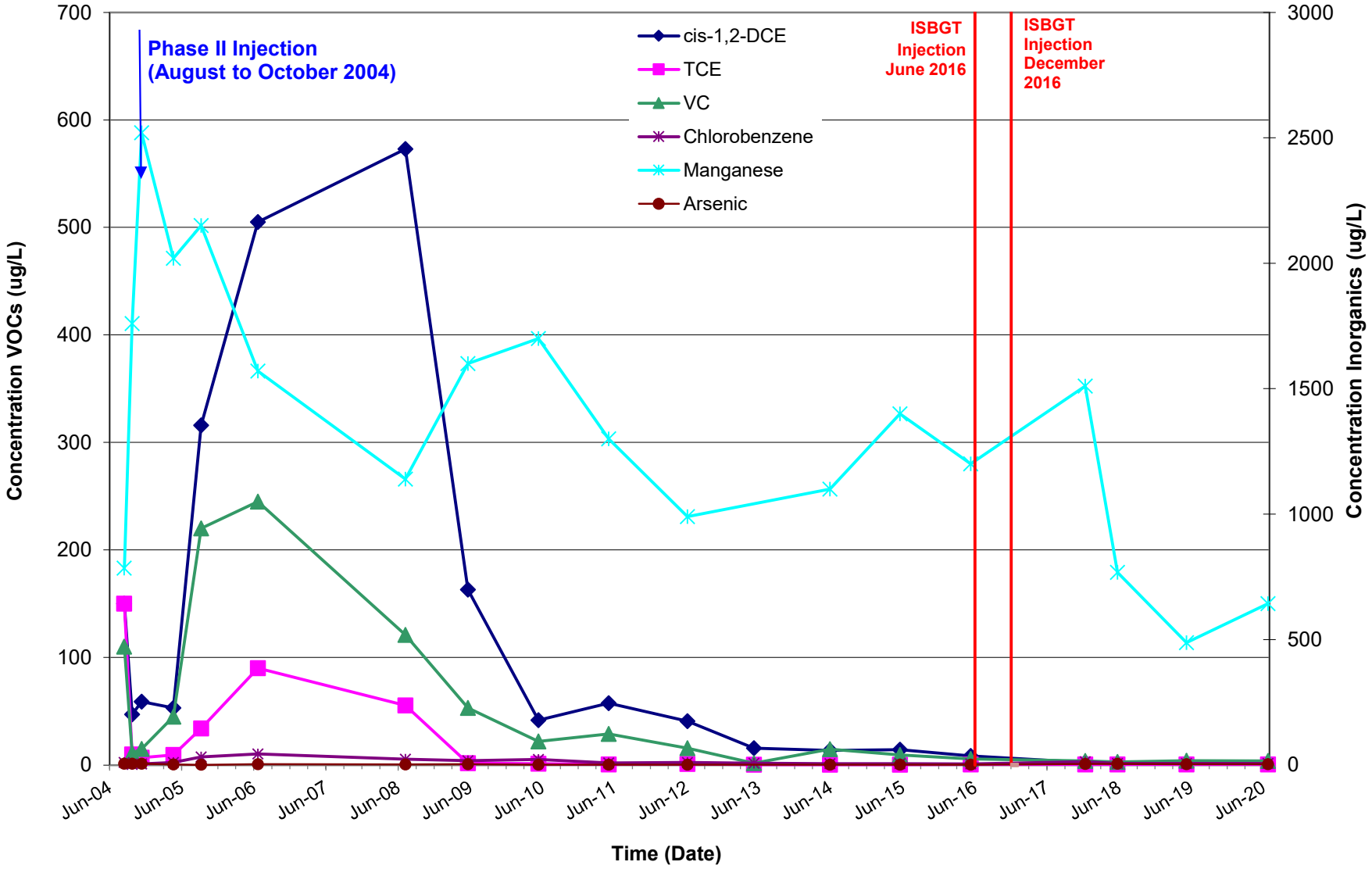
Note: *June 2020 Mann Kendall analysis based solely on cis-1,2-DCE analytical results

GRAPHS

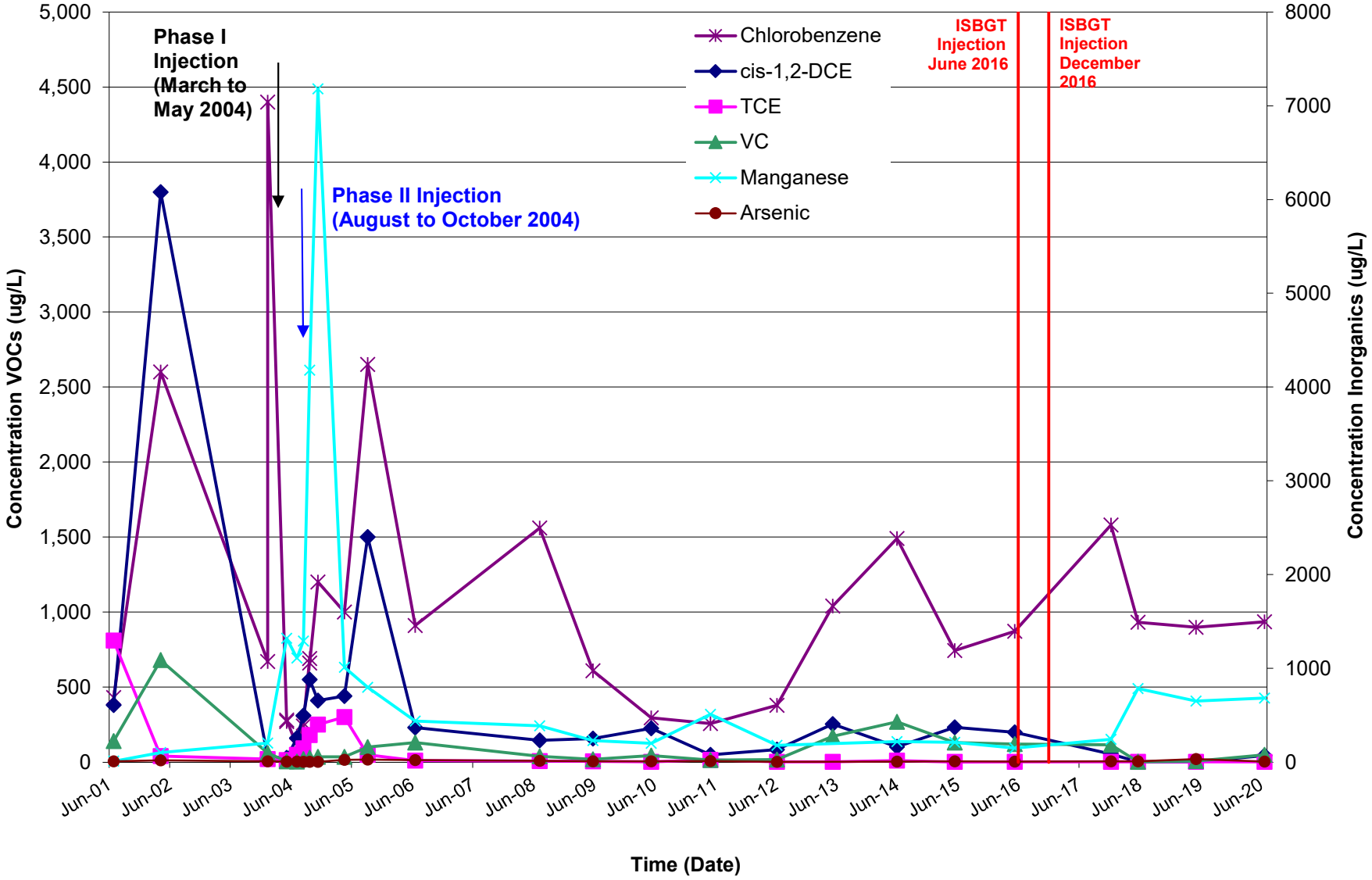
Graph 6-1
Contaminant Trends - Source Area Well S03M50
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania



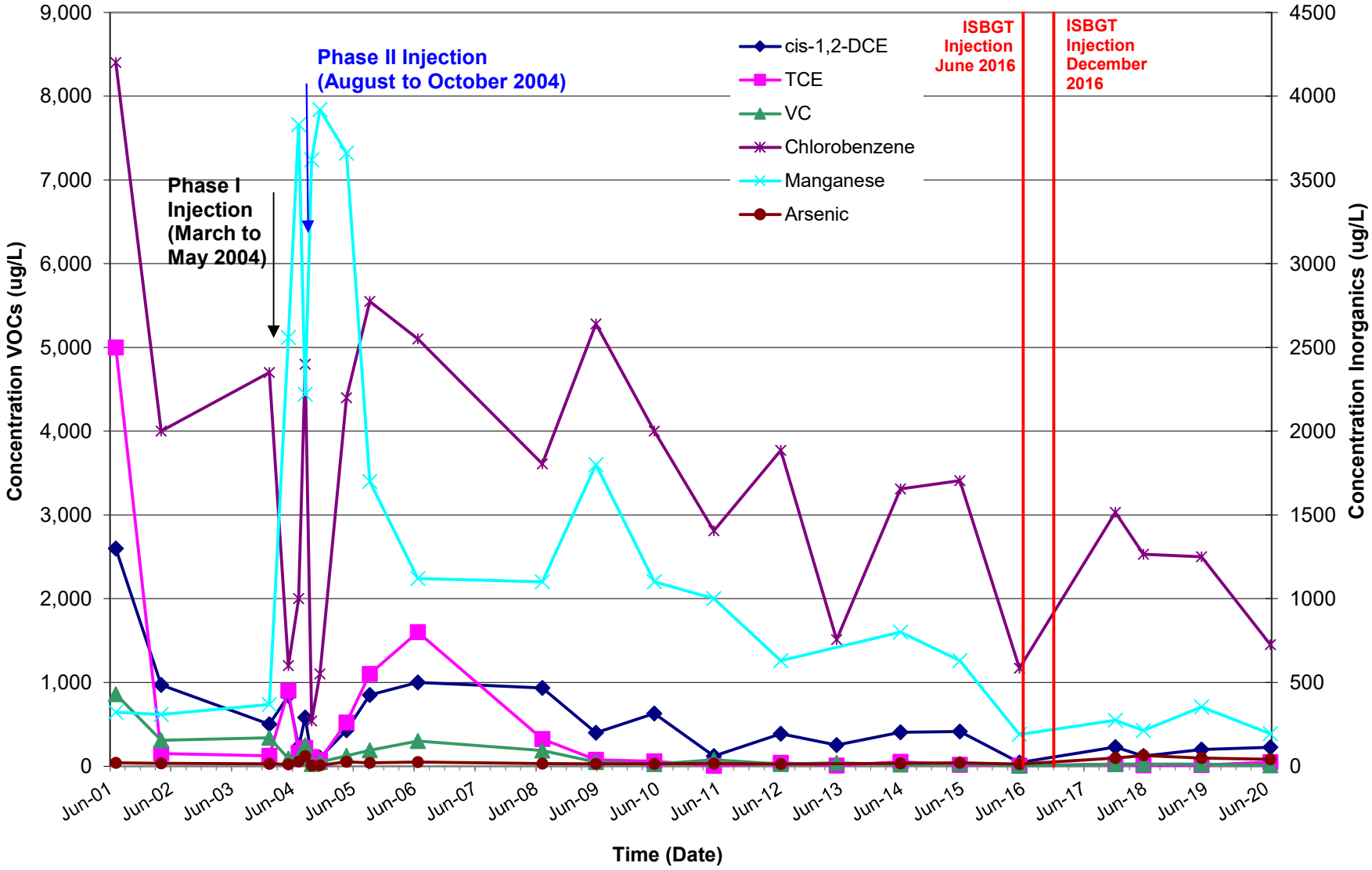
Graph 6-2
Contaminant Trends - Source Area Well S03M54
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania



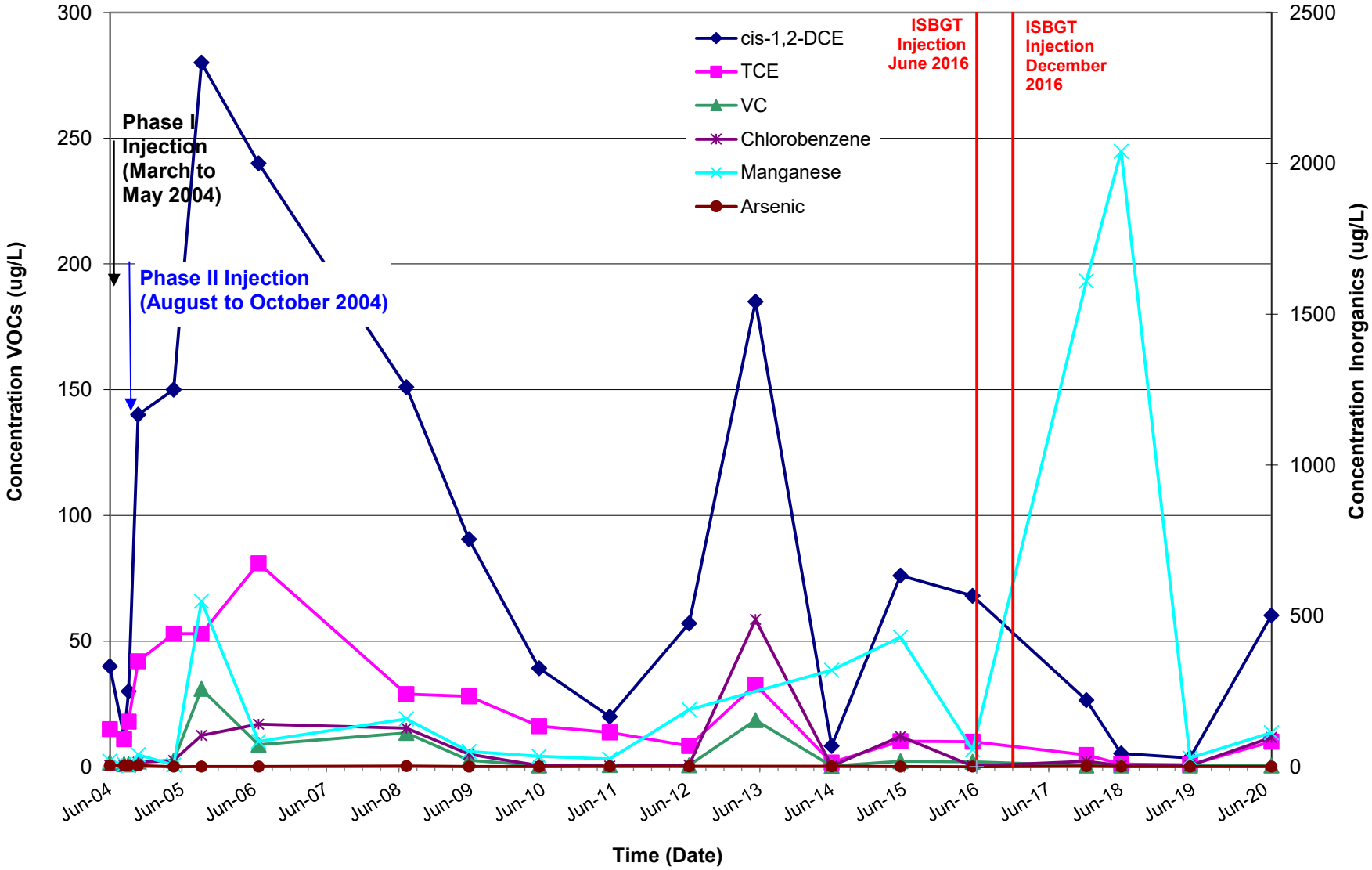
Graph 6-3
Contaminant Trends - Source Area Well S03M17
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania



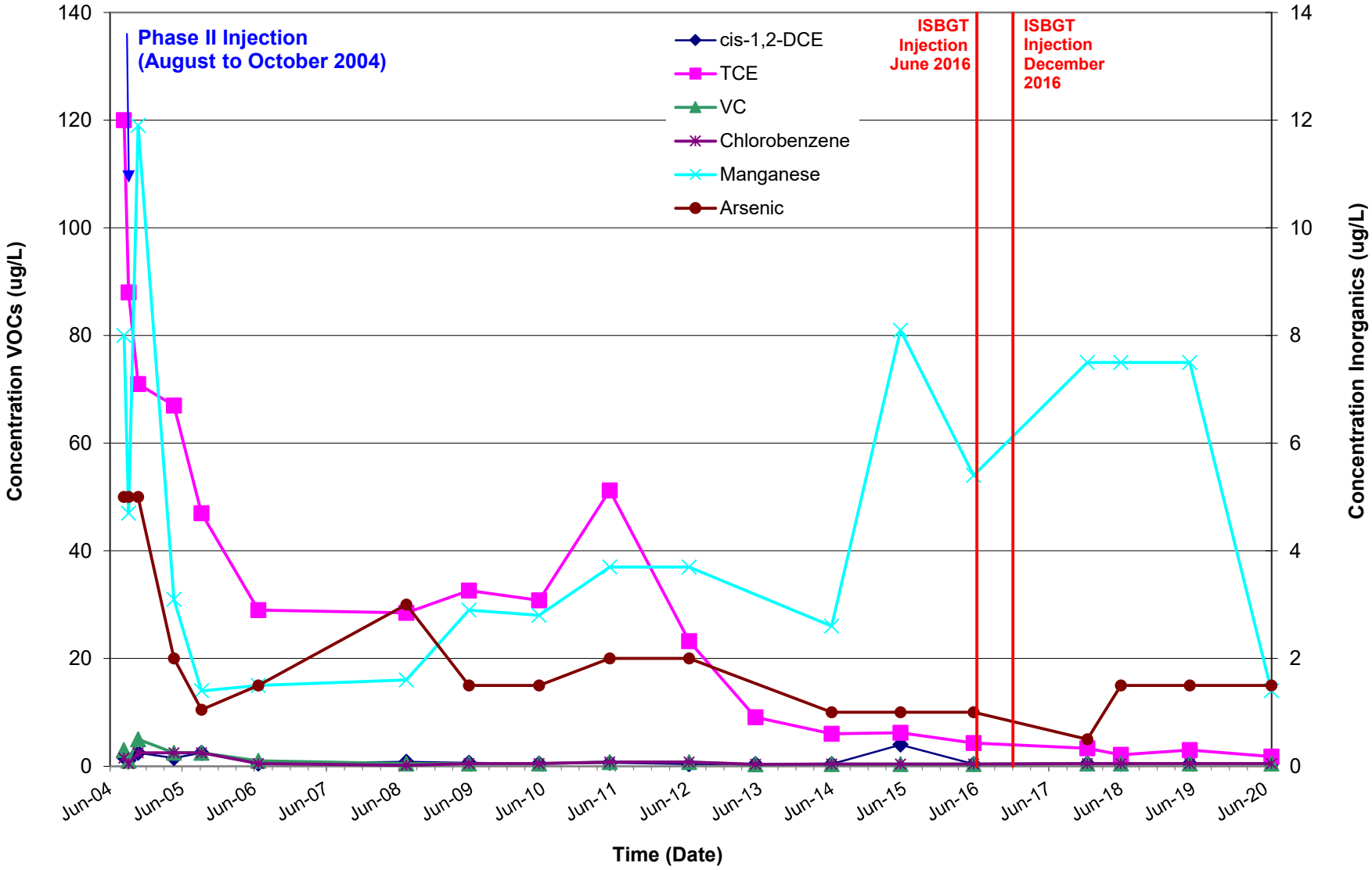
Graph 6-4
Contaminant Trends - Source Area Well S03M18
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania



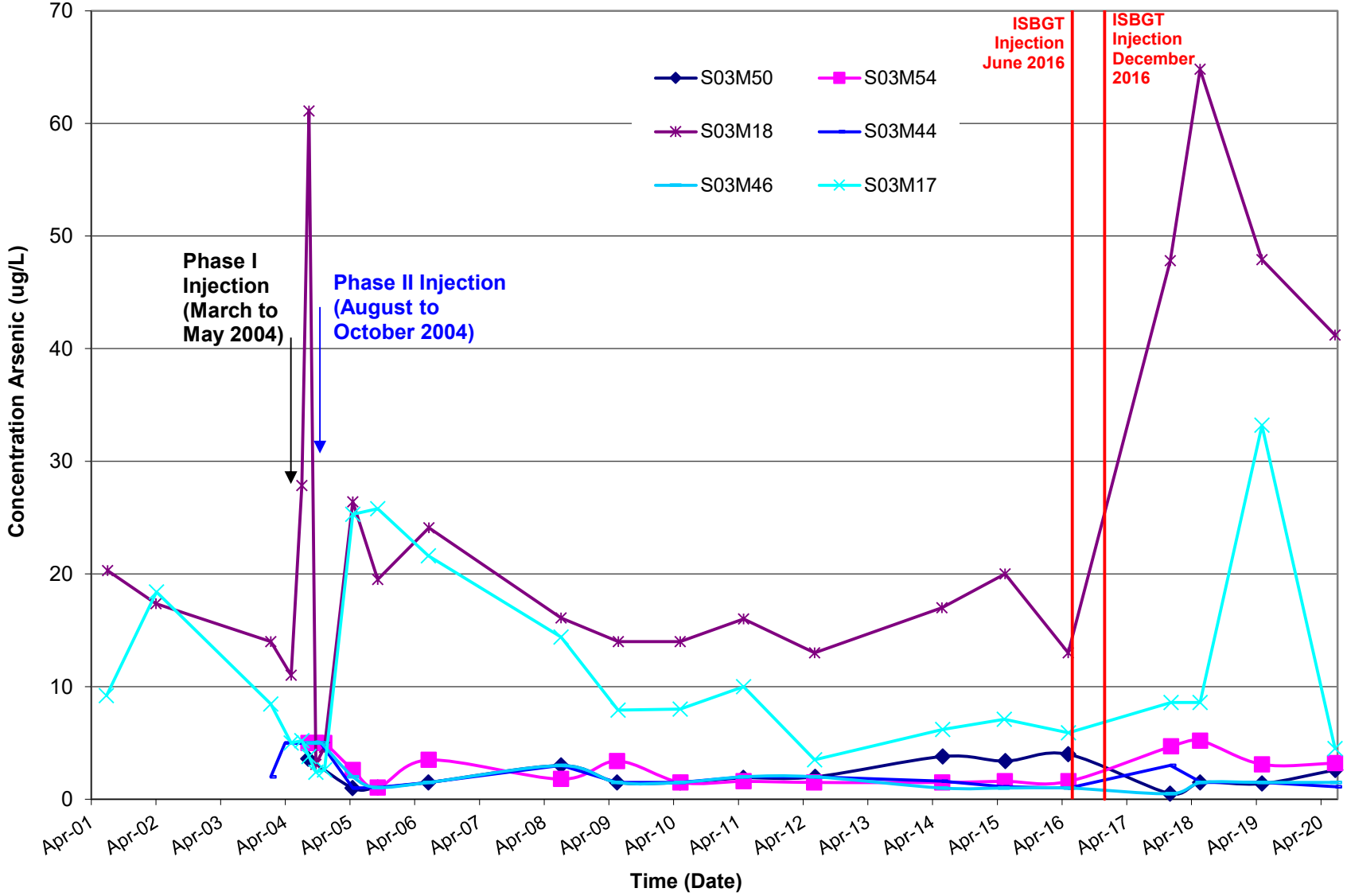
Graph 6-5
Contaminant Trends - Downgradient Well S03M44
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania



Graph 6-6
Contaminant Trends - Downgradient Well S03M46
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

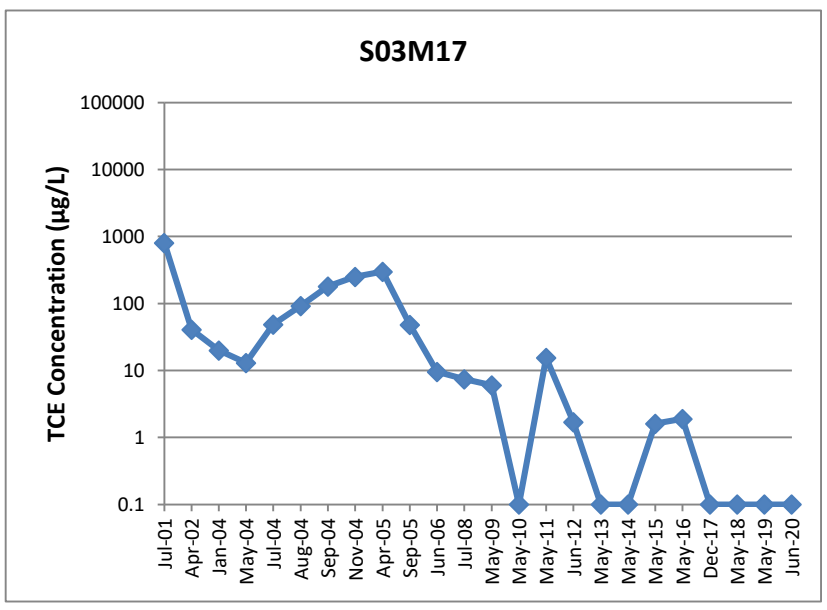


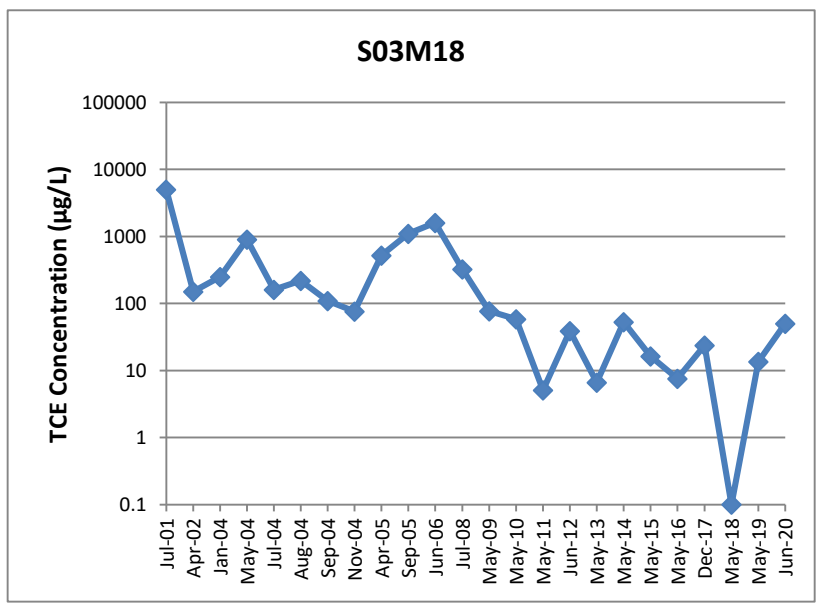
Graph 6-7
Contaminant Trends - Arsenic by Well
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

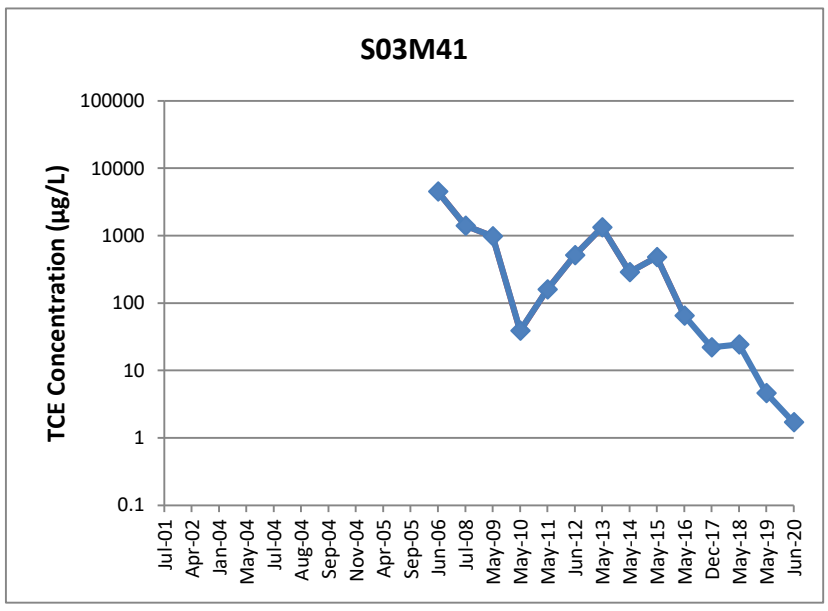


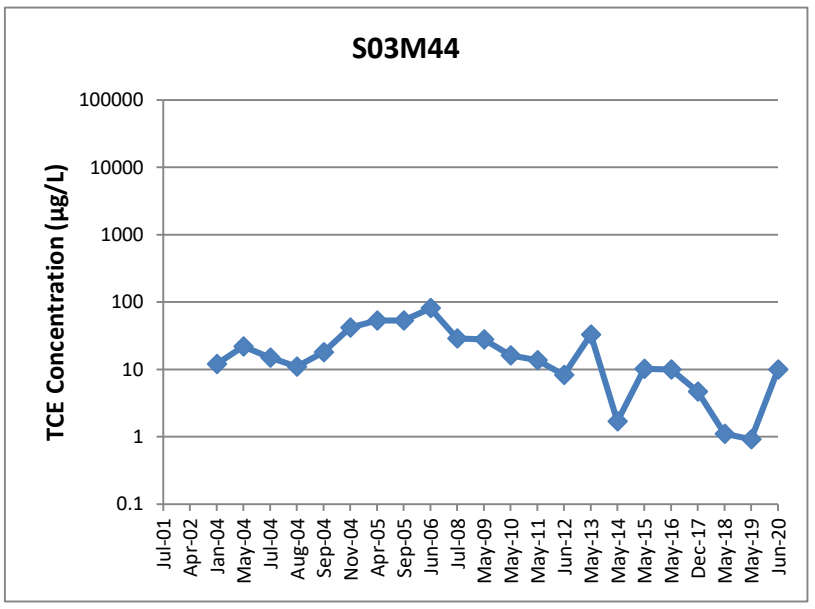
Graph 6-8
Site 3 Groundwater Trends - Trichloroethene
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

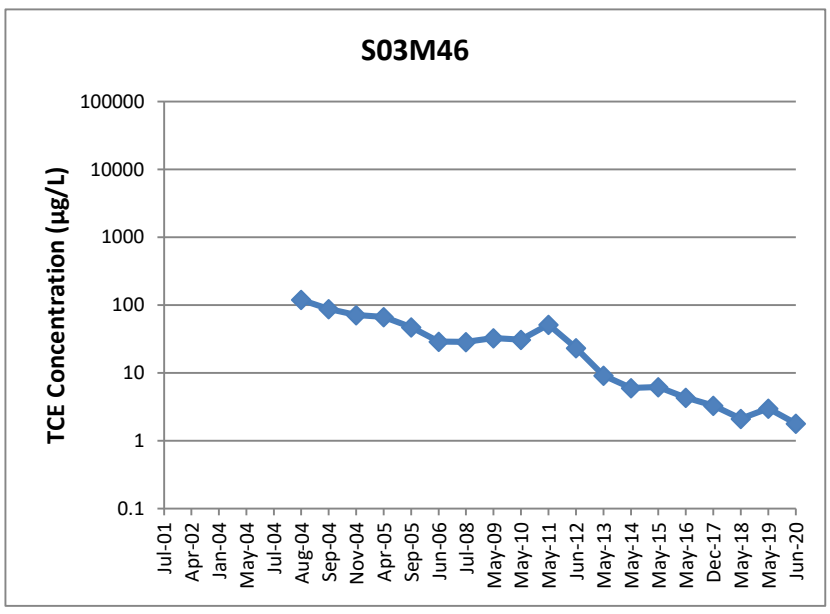
Trichloroethene MCL/PRG = 5 µg/L

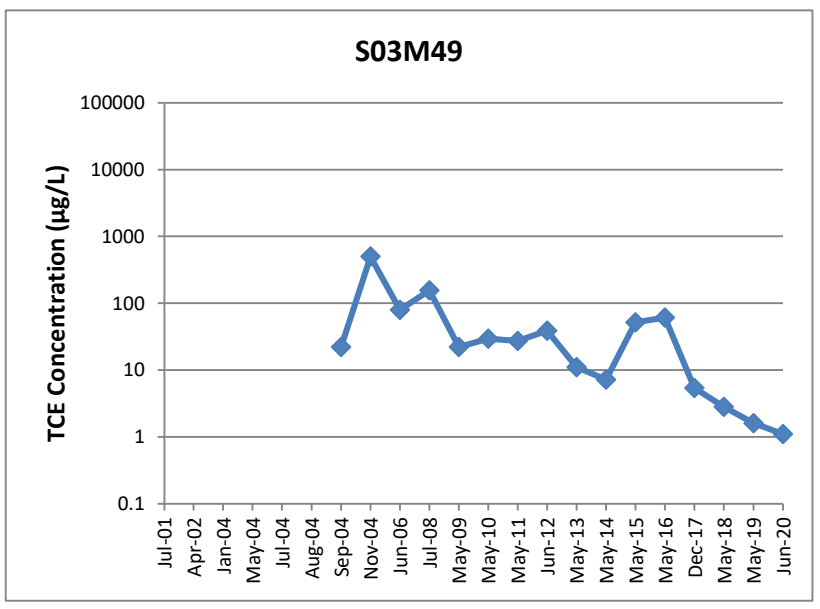


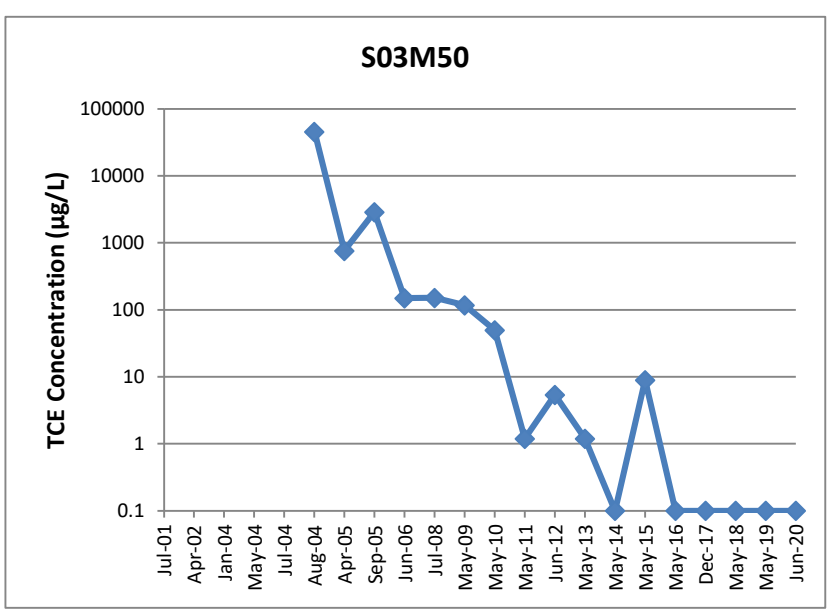


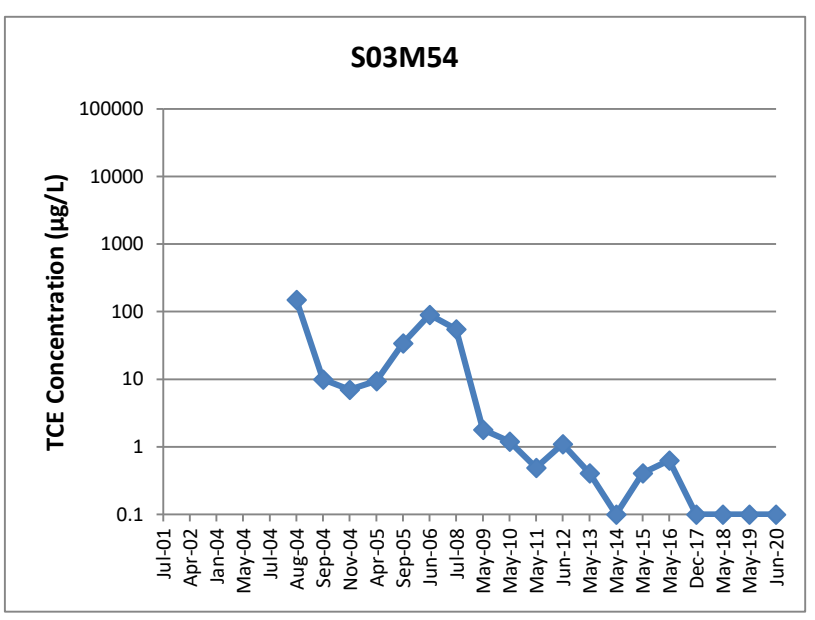






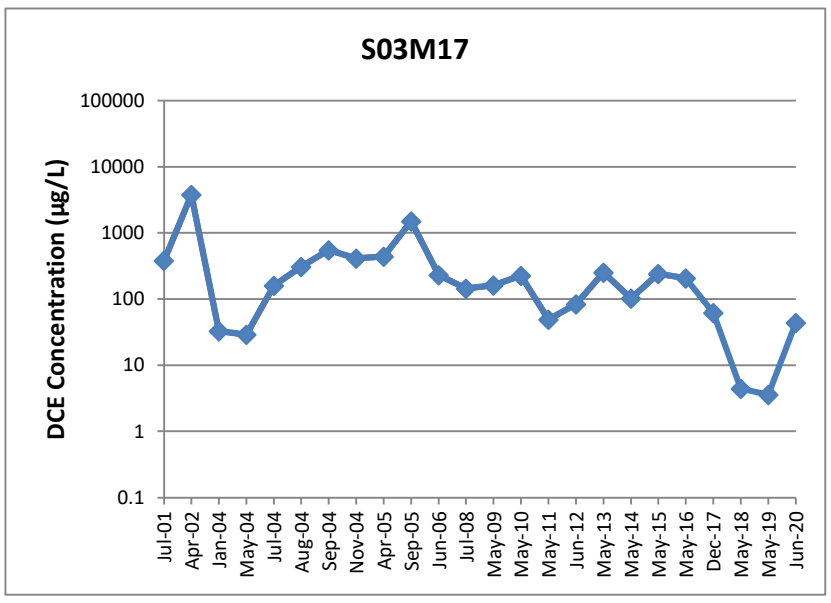


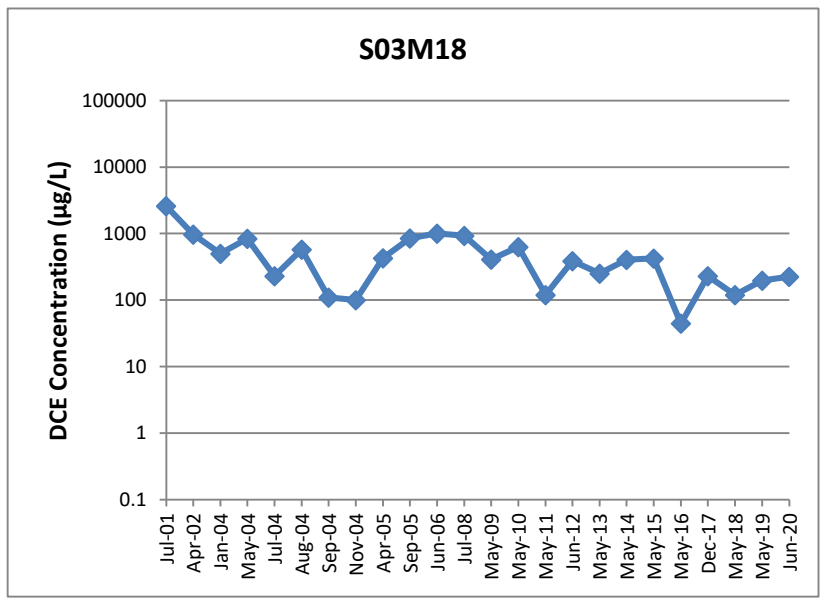


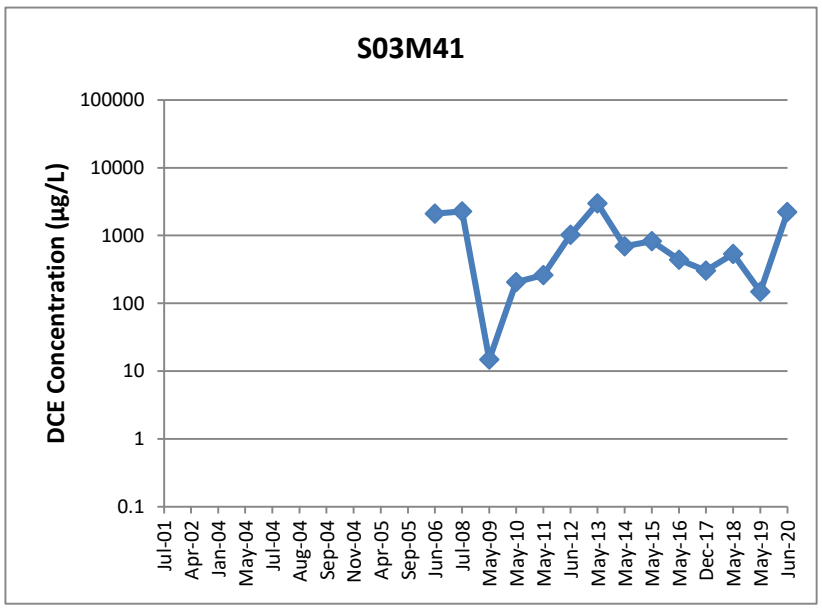


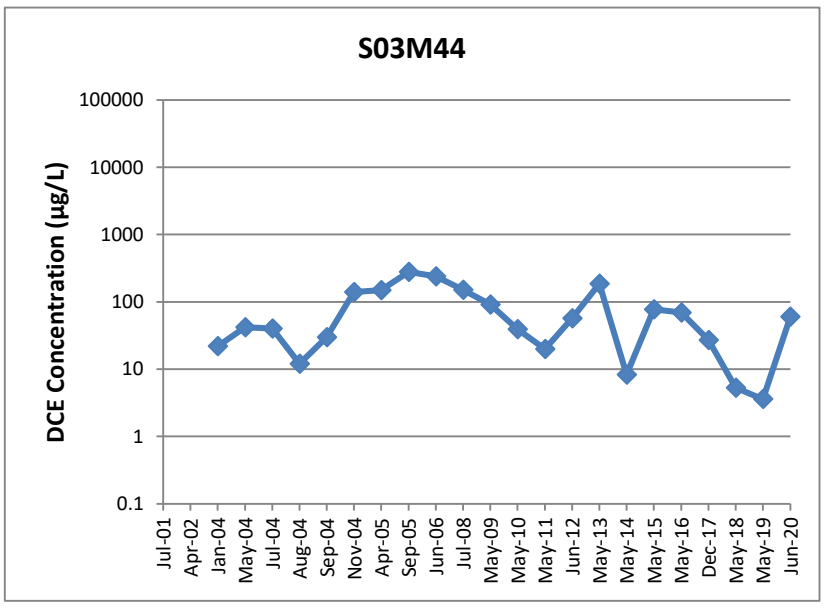
Graph 6-9
Site 3 Groundwater Trends - 1,2-Dichloroethene (Total)
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

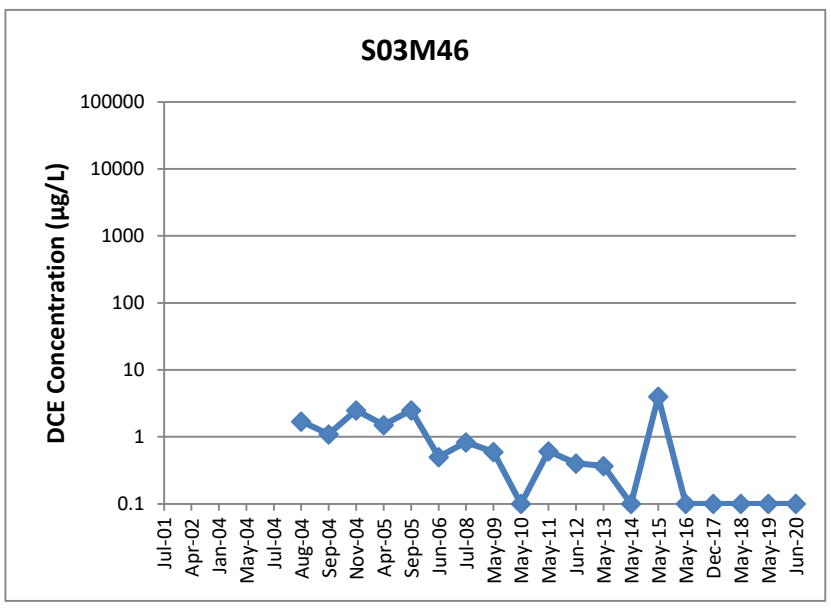
cis-1,2-Dichloroethene MCL/PRG = 70 µg/L

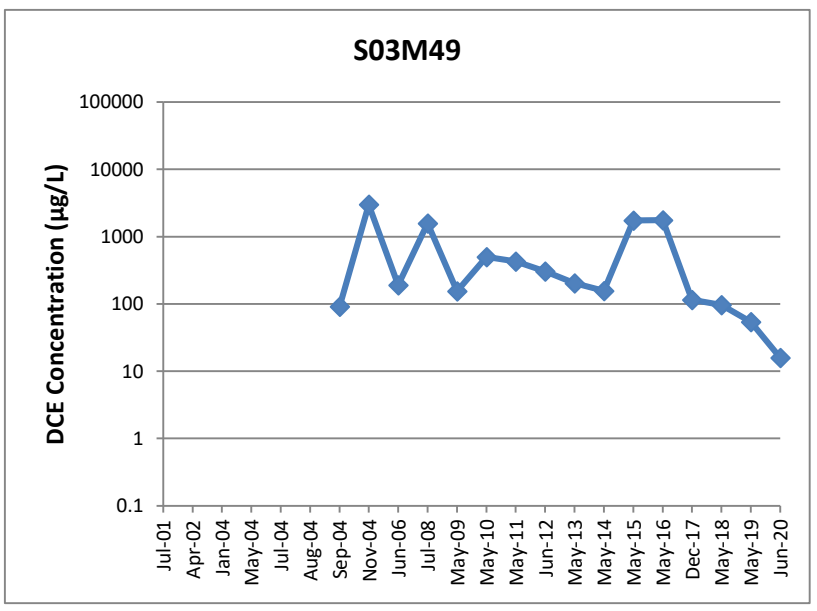


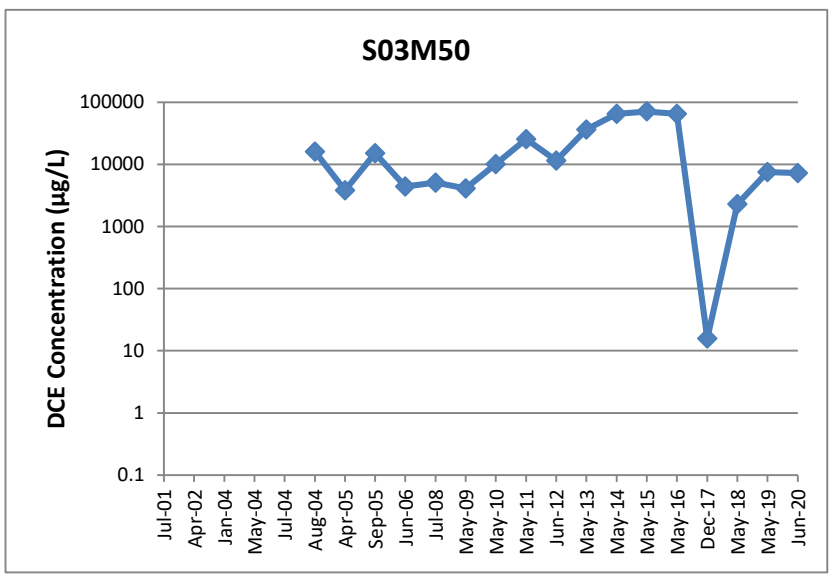


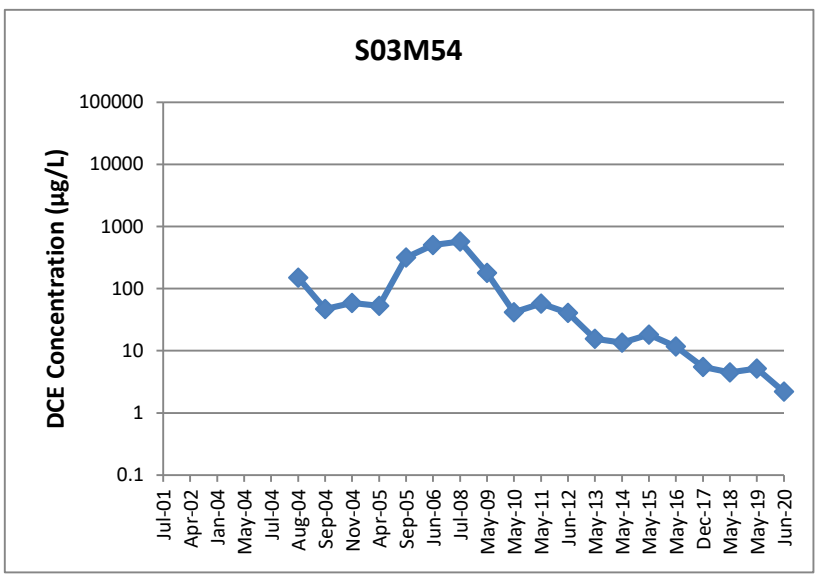








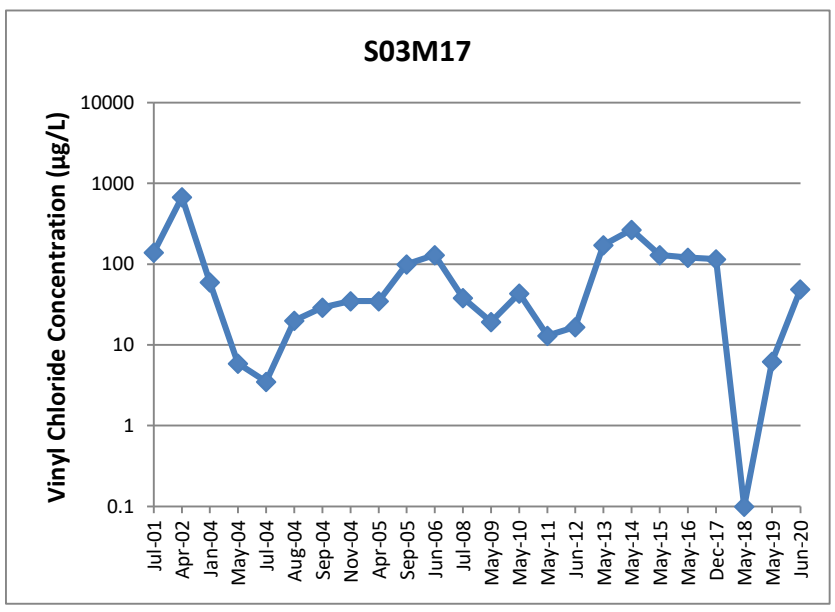


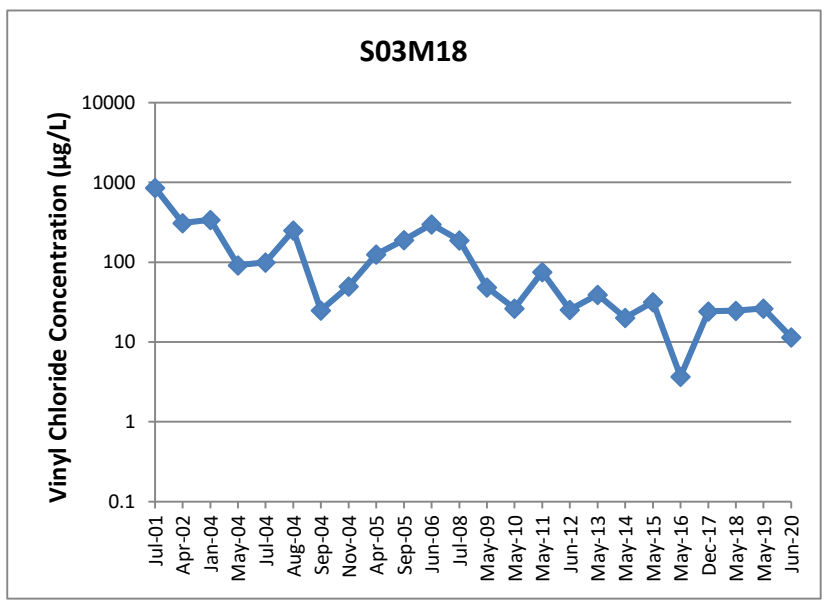


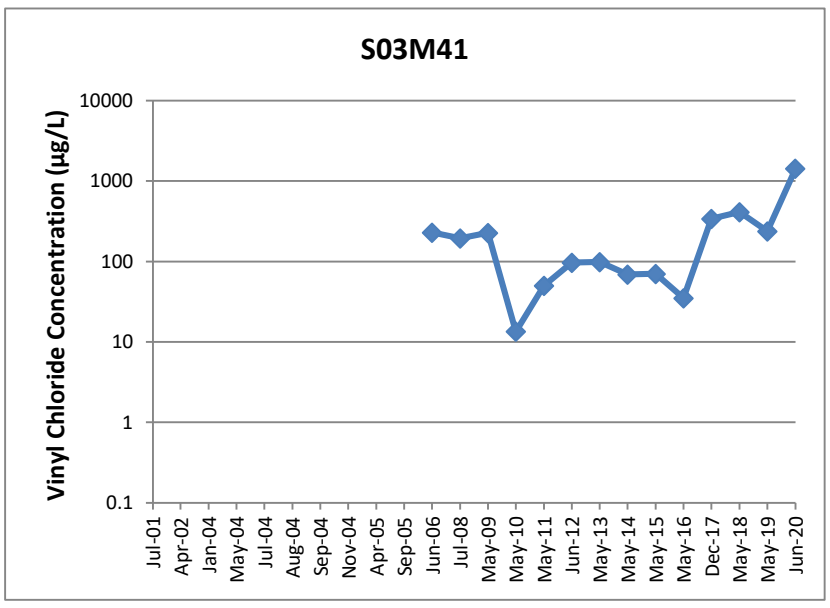
Note: June 2020 data based solely on cis-1,2,-DCE analytical results

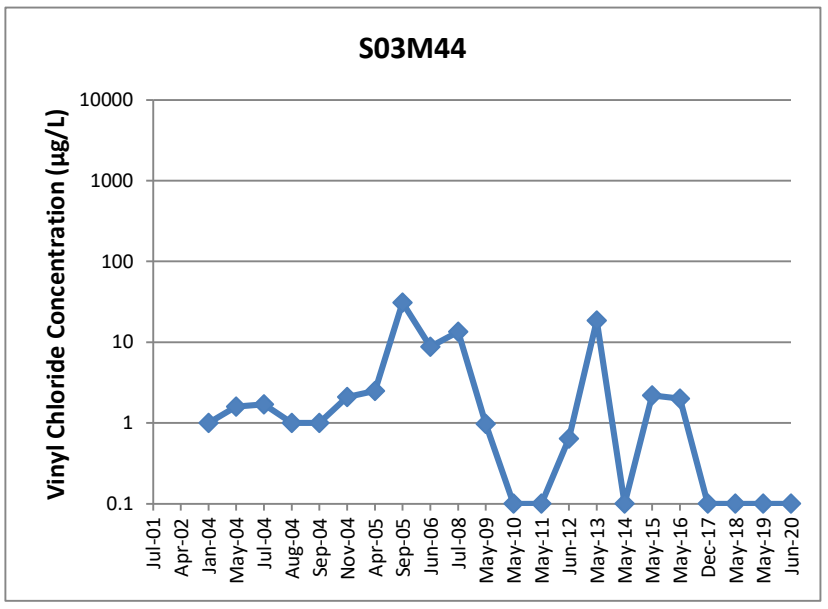
Graph 6-10
Site 3 Groundwater Trends - Vinyl Chloride
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

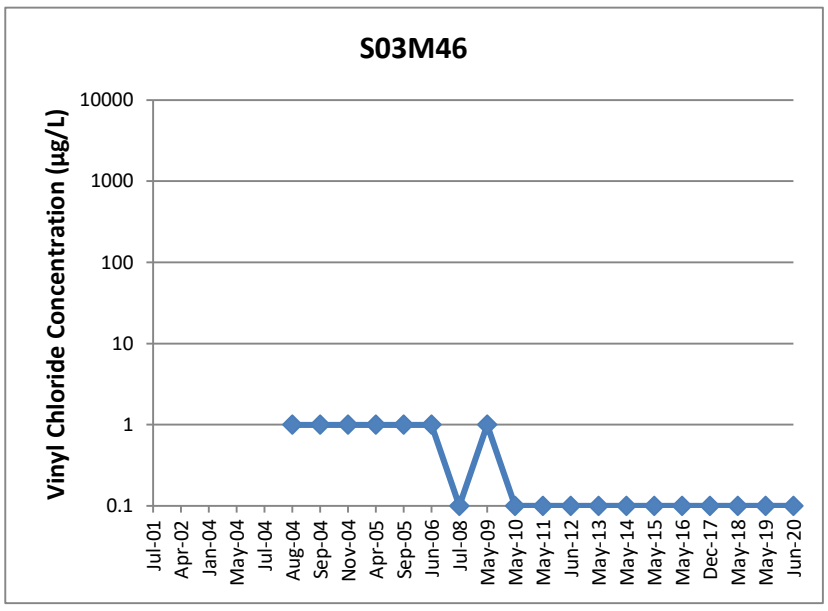
Vinyl Chloride MCL/PRG = 2 µg/L

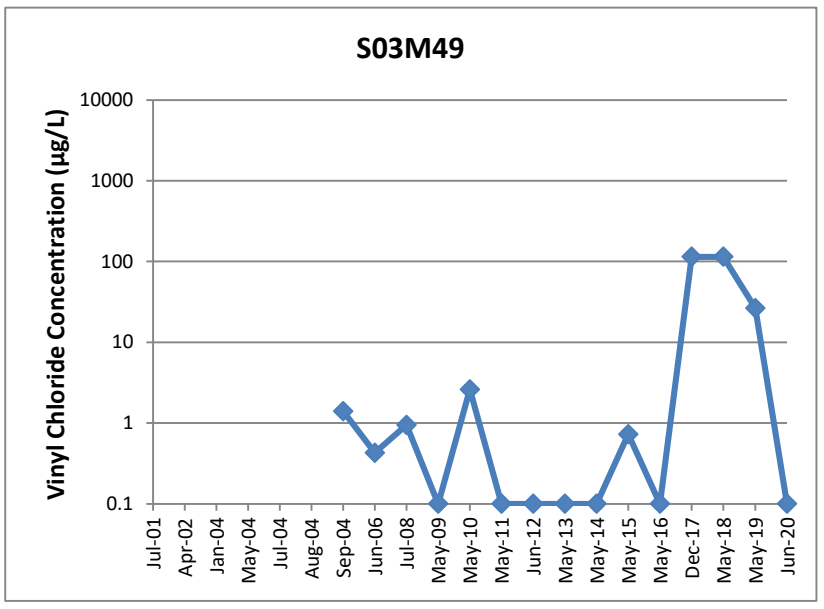


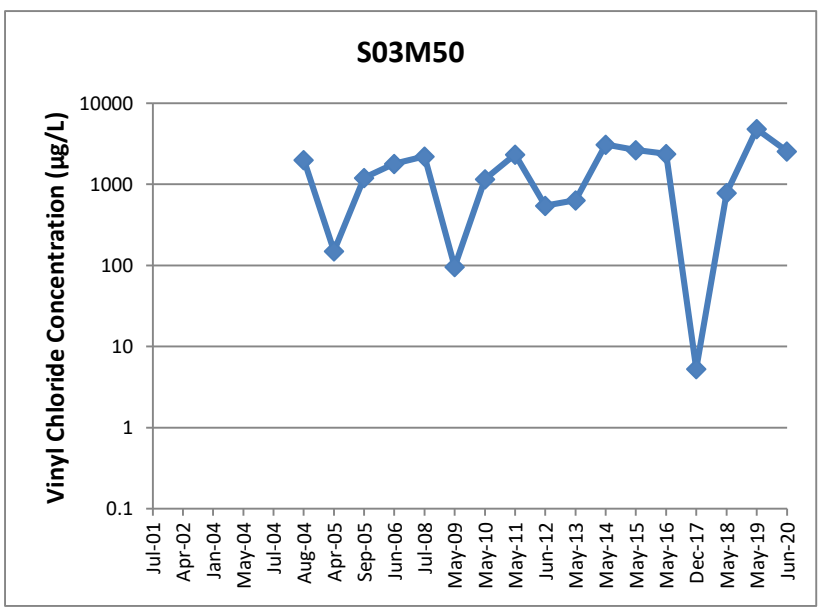


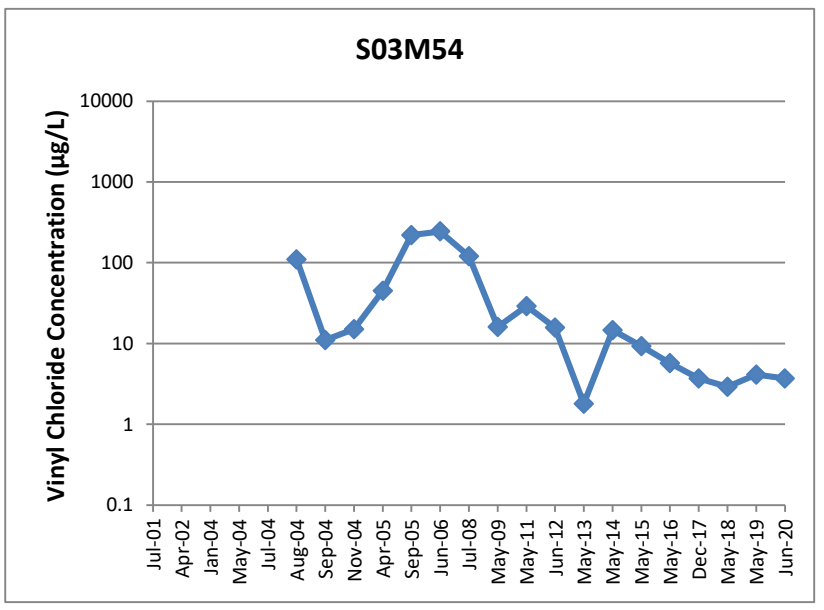






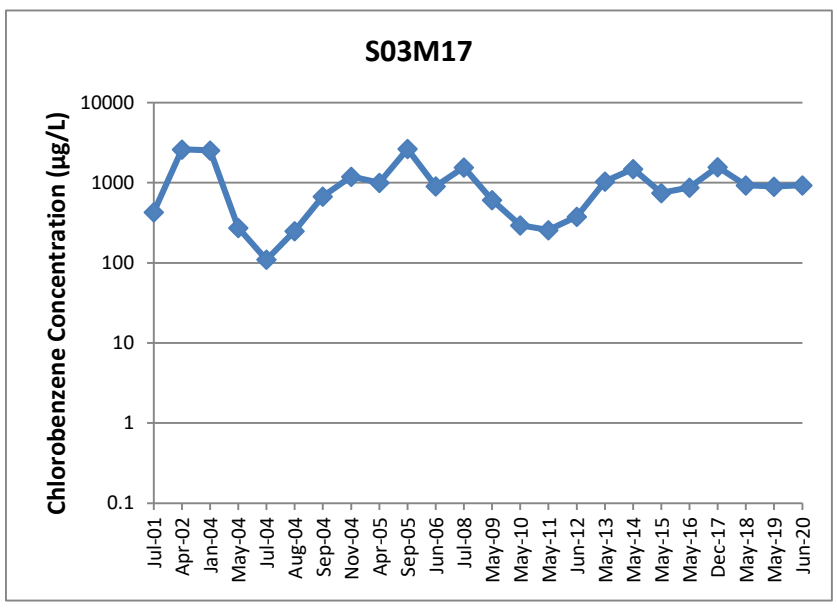


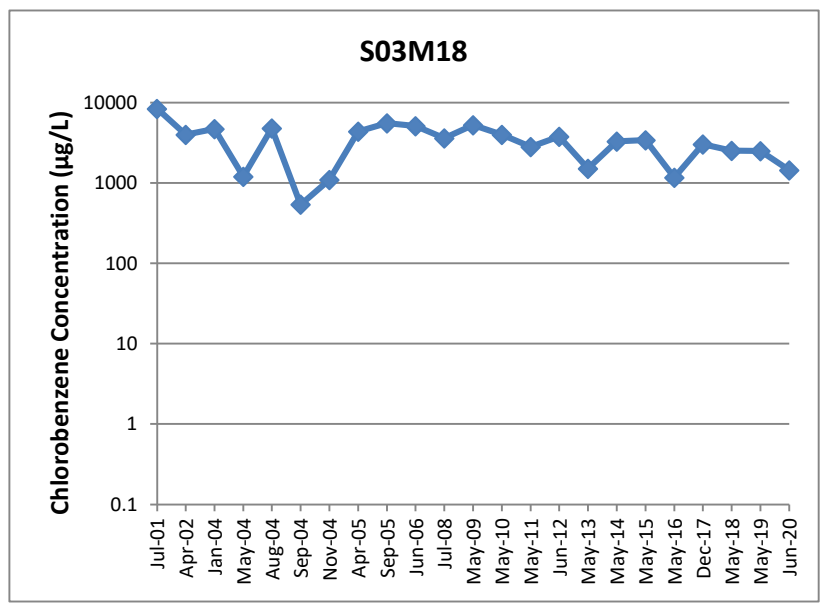


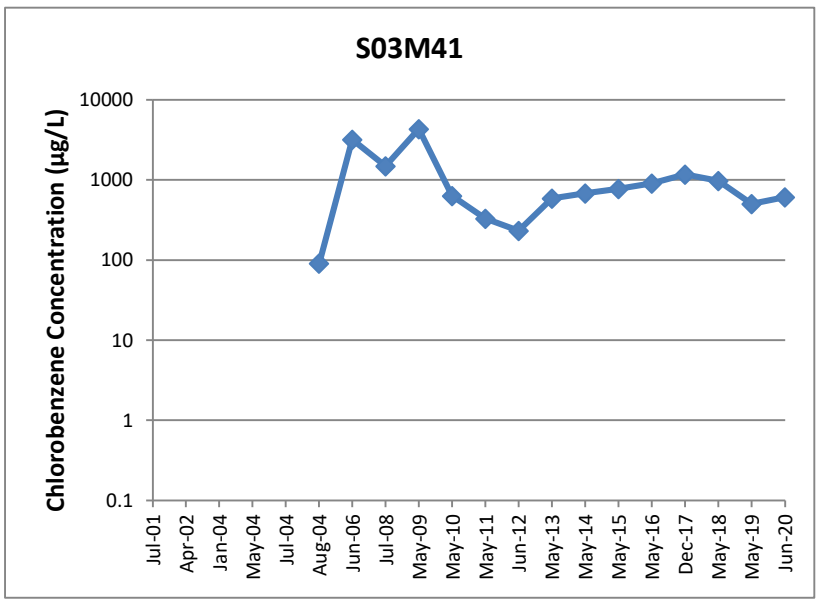


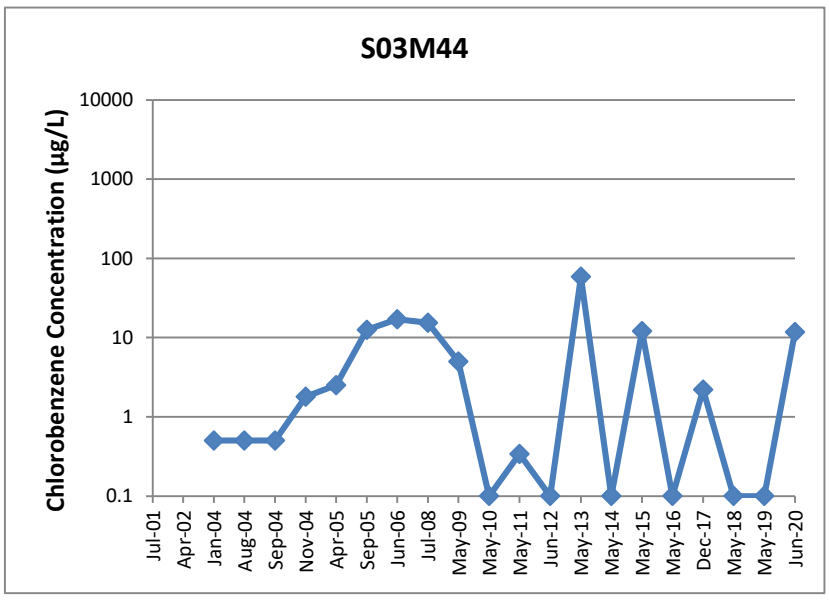
Graph 6-11
Site 3 Groundwater Trends - Chlorobenzene
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

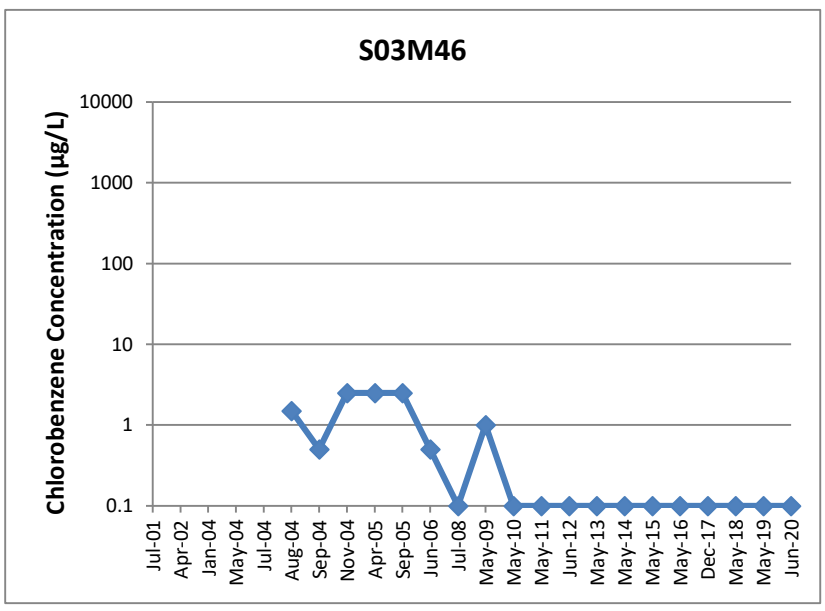
Chlorobenzene MCL/PRG = 100 µg/L

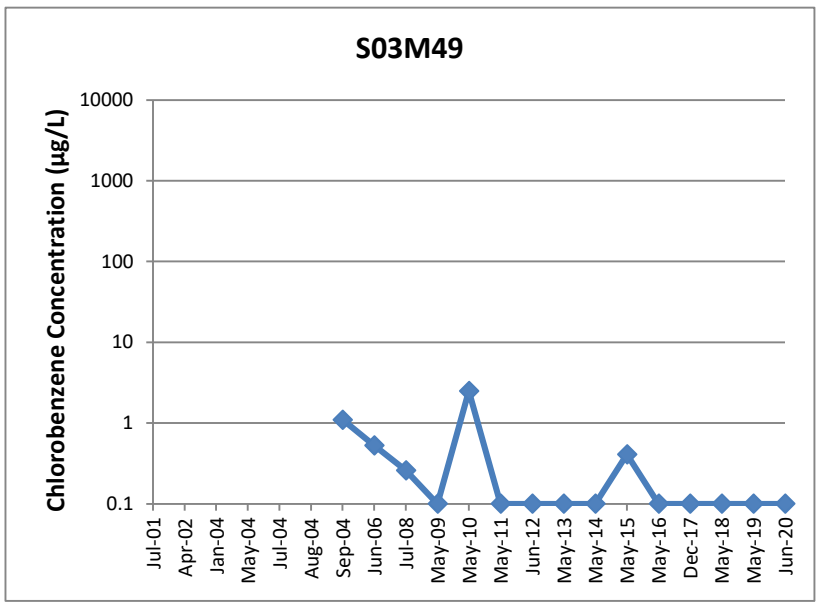


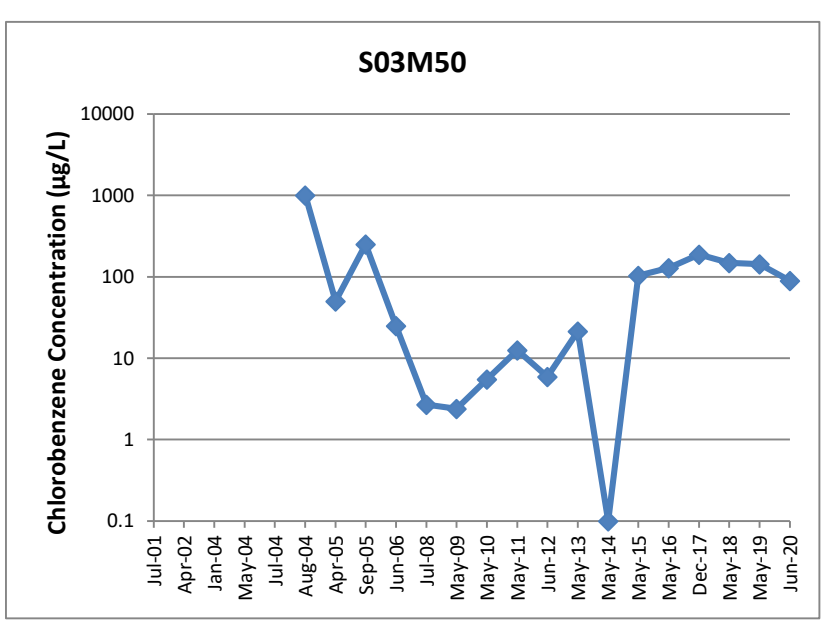


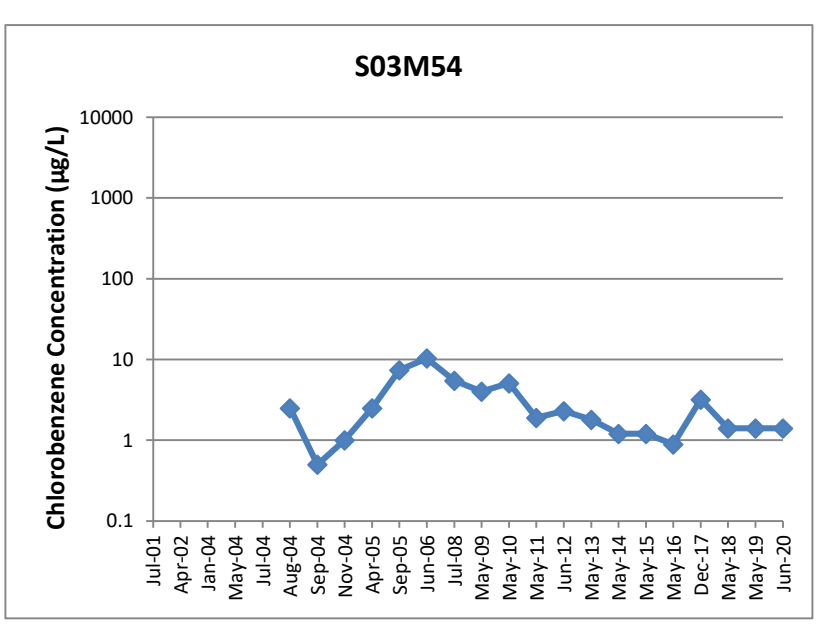






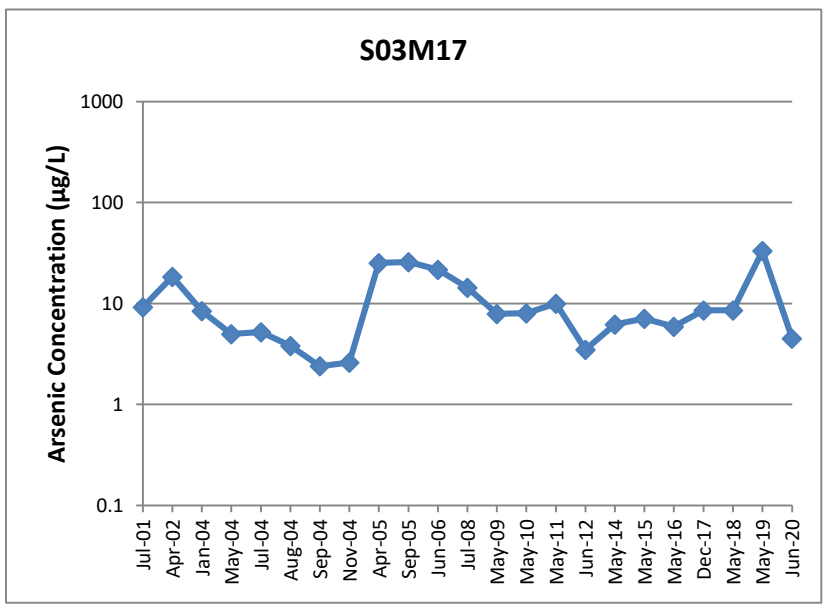


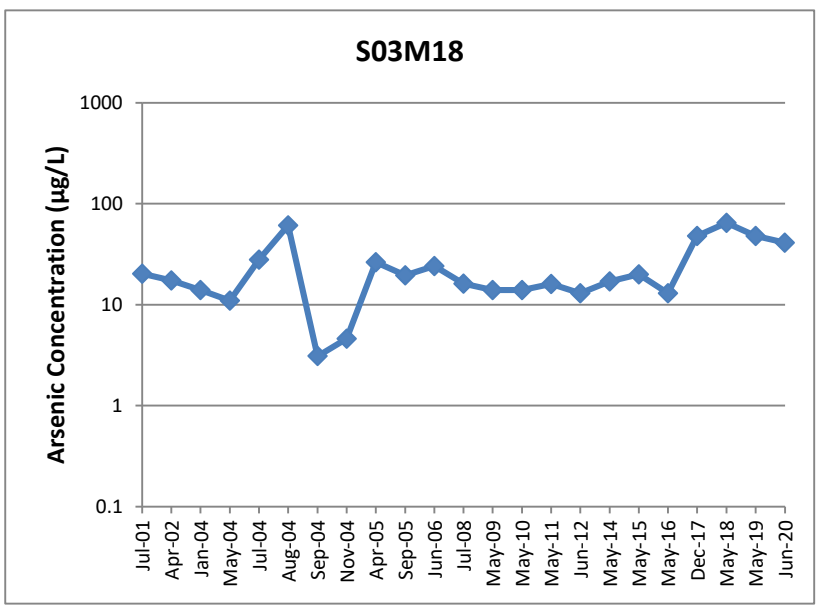


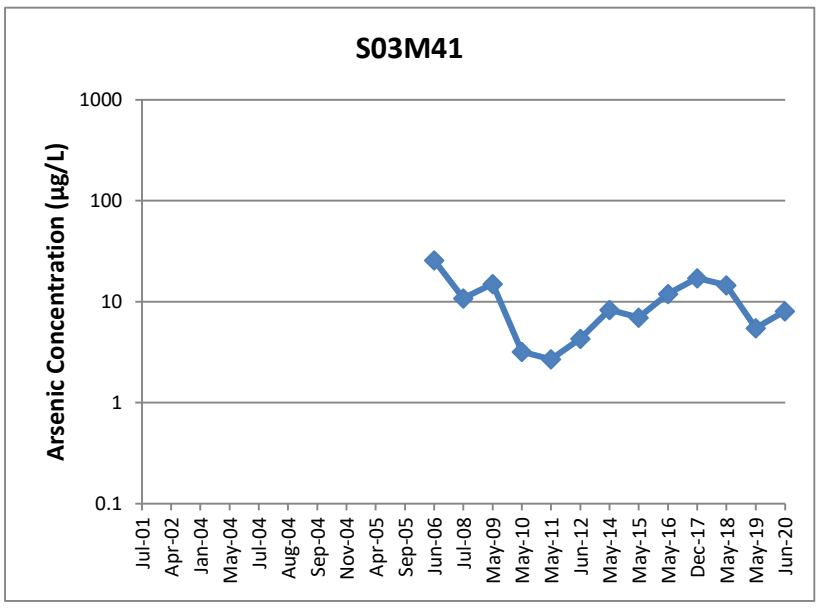


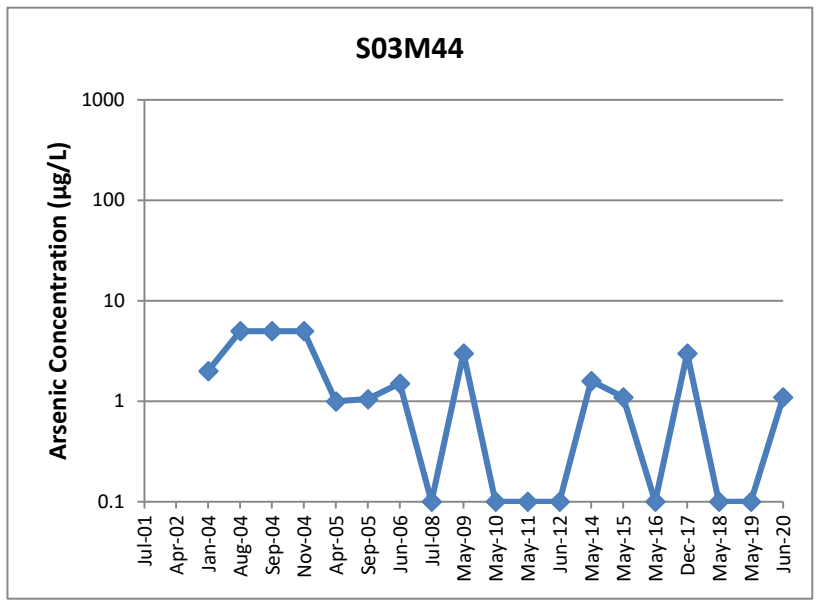
Graph 6-12
Site 3 Groundwater Trends - Arsenic
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

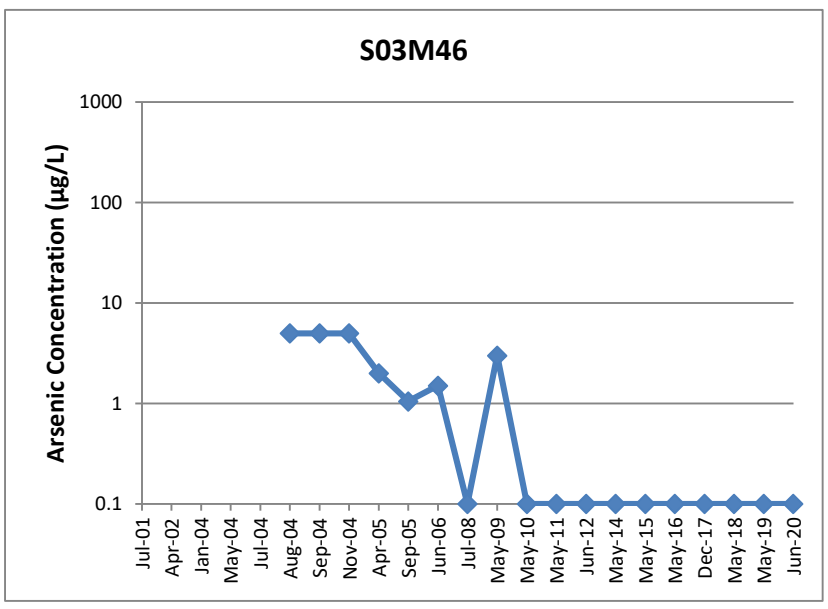
Arsenic MCL/PRG = 10 µg/L

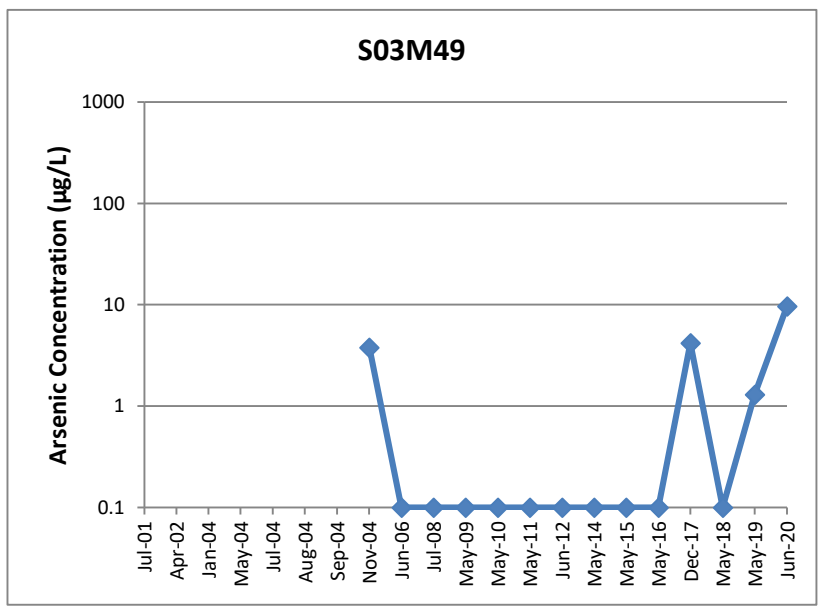


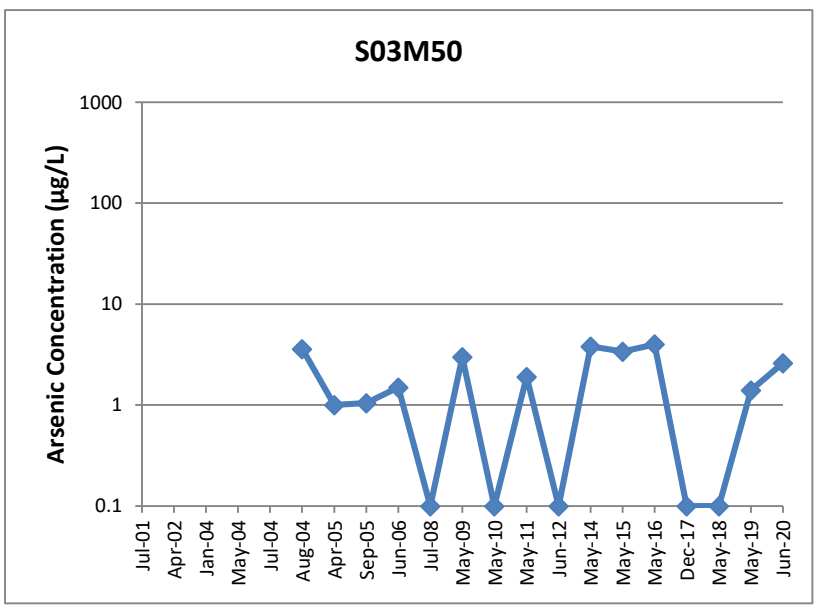


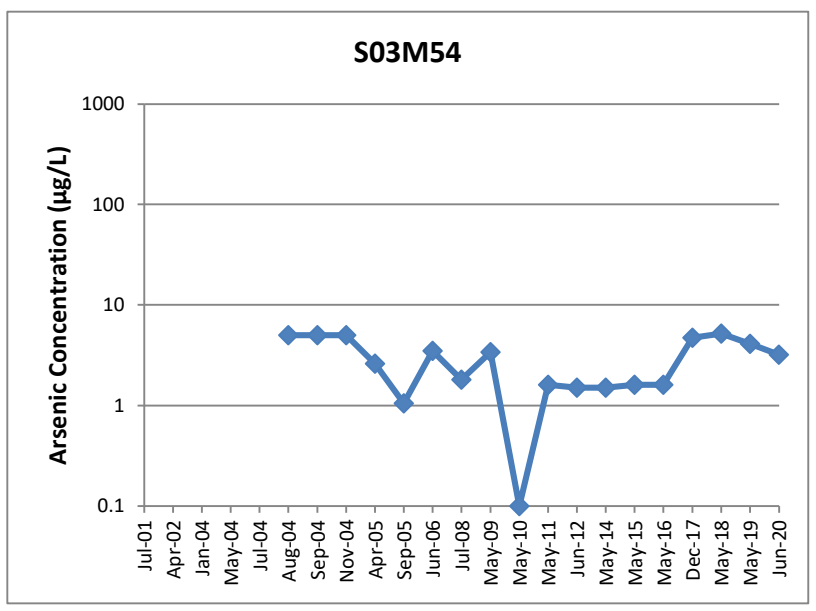






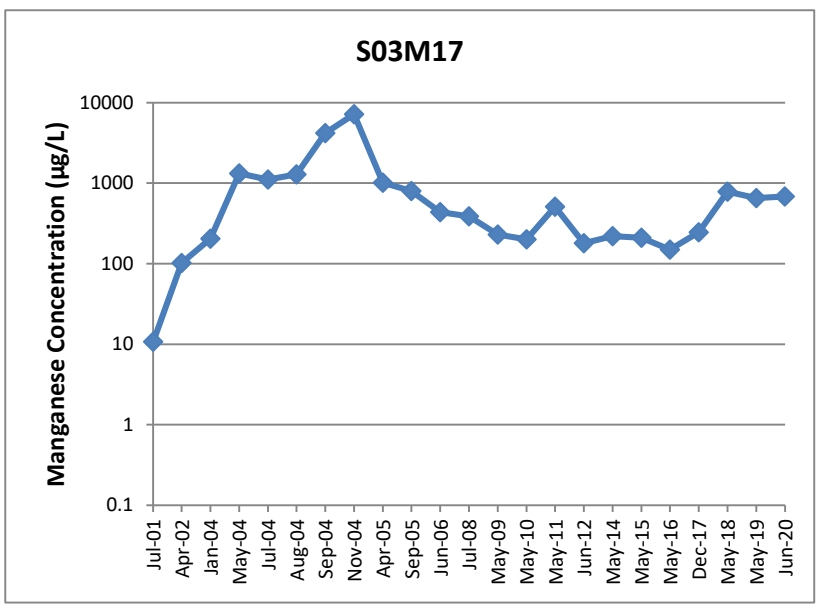


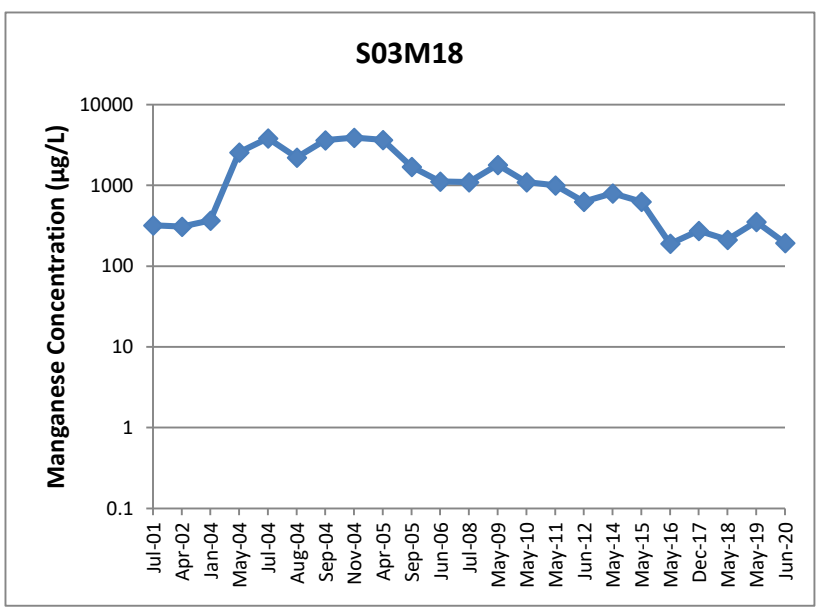


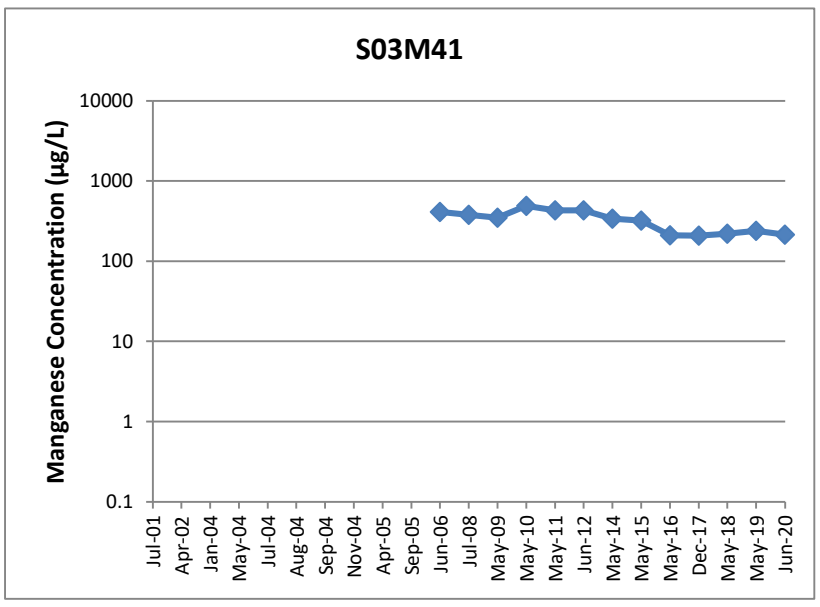


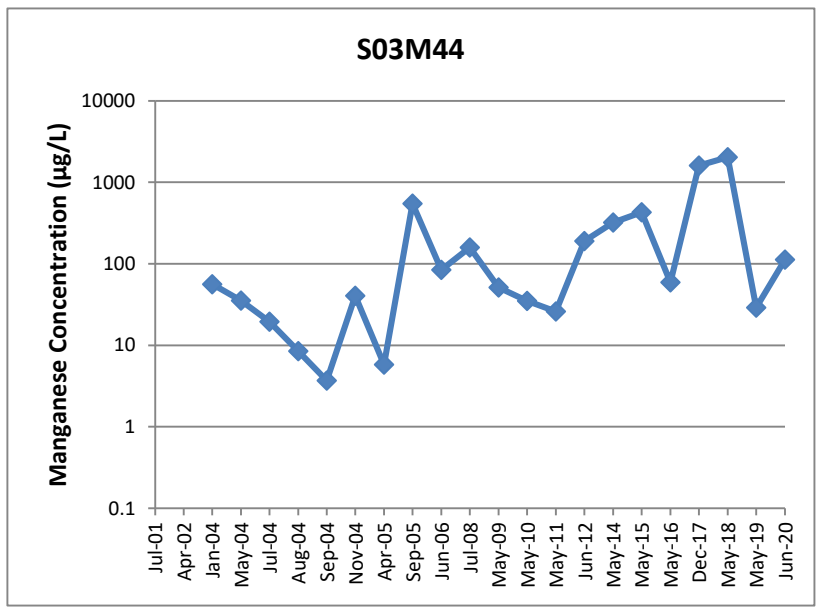
Graph 6-13
Site 3 Groundwater Trends - Manganese
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

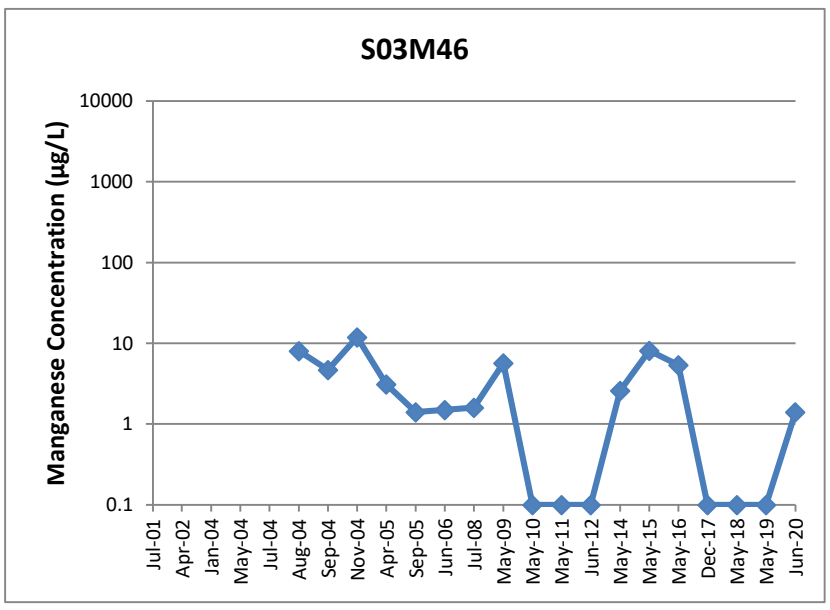
Manganese MCL/PRG = 314 µg/L

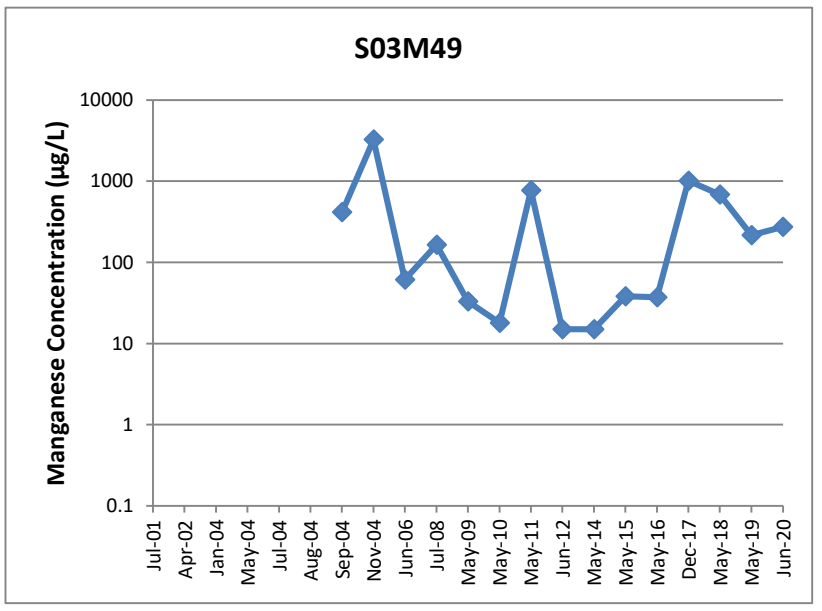


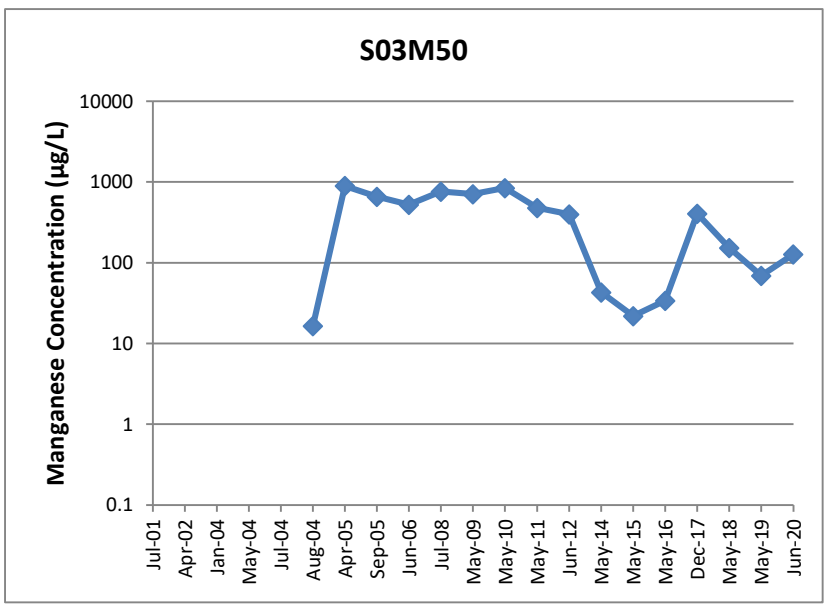


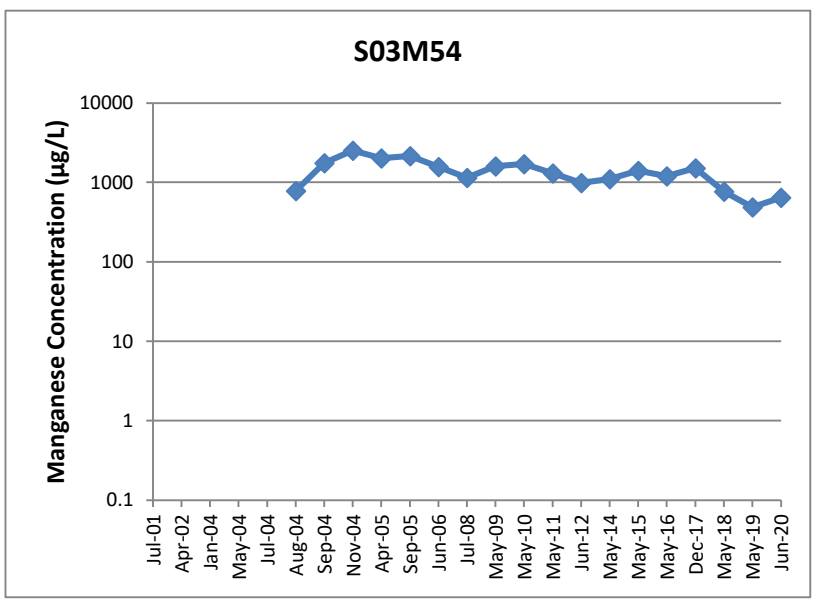












FIGURES

PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 10/30/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	NOTES AND SOURCES: 1. Original figure produced by previous contractor, Tetra Tech, as part of the 2011 Annual Monitoring Report, Mechanicsburg, PA	Site Location Map and Well Location Plan Sites 3, 8, and 9 Naval Support Activity Mechanicsburg, PA	FIGURE 2-1 AMS RHEA JV

Legend

- Monitoring Well
- Groundwater Flow Direction
- Groundwater Contour
- Environmental Restoration Site
- Building
- Road
- Storm Sewer Pipe

N

0 75 150 300 Feet

Scale : 1" = 150'

AMS RHEA JV

Site 3
Naval Support Activity
Mechanicsburg, PA

NOTES AND SOURCES:

1. Elevations in red text were used in contouring the shallow contours (50' - 200')
2. All groundwater elevations are in units of feet referenced to the National Geodetic Vertical Datum (NGVD)

PROJECT NO:	1041
PREPARED FOR:	NAVY
DATE:	10/30/2020
DRAWN BY:	ZW
CHK'D BY:	MS
APP'D BY:	BM

Potentiometric Surface Map
Shallow Wells
June 23, 2020

FIGURE 4-1

Site 3

Site 8

Former Burnpit #2

Former Burnpit #1

Stormwater Management Pond

S03M10 398.33
S03M06 390.08
S03M02 397.79
S03M45 398.24
S03M01 404.44
S03M05 404.15
S03M14 406.2
S03M33 406.96
S03M57 413.09
S03M58 412.93
S03M32 406.12
S03M07 398.8
S03M43 400.79
S03M17 404.95
S03M18 405.11
S03M60
S03M03 398.44
S03M44 398.36
S03M38
S03M16 401.6
S03M26 411.15
S03M61S 400.87
S03M25 411.14
S03M42 403.3
S03M36 409.84
S03M56 400.99
S03M41 404.33
S03M35 401.62
S03M19 397.97
S03M28 410.68
S03M24 405.42
S03M46 412.23
S03M73D1 398.02
S03M27
S03M34 402.53
S03M66D1 412.23
S03M62S 401.33
S03M23 410.92
S03M31 400.57
S03M67D1 401.06
S03M50 412.23
S03M30
S03M21 404.47
S03M51
S03M54 412.73
S03M48 408.39
S03M53 412.81
S03M47 413.08
S03M49 413.5
S03M22 403.14
S03M52 403.5
S03M69D1 401.14
S03M04 403.13
S03M08 403.27
S03M68D1 402.8

394 396 398 400 402 404 406 408 410 412

N

Legend

- Groundwater Flow Direction
- Groundwater Contour
- Monitoring Well
- Environmental Restoration Site
- Existing Building

402

504

S03M13
404.73

403

401

399

S03M65D
397.74

Former Burnpit #2

S03M15
398.01

604

Site 8

Site 3

S03M64D1
401.03

S03M64D3
NA

603

S03M73D2
397.85

401

411

S03M66D2
411.78

399

S03M71
399.65

S03M72
402.06

409

S03M67D2
400.95

403

S03M63D3
404.34

407

Stormwater Management Pond

S03M70
410.58

409

Former Burnpit #1

S03M69D2
401.1

405

704

401

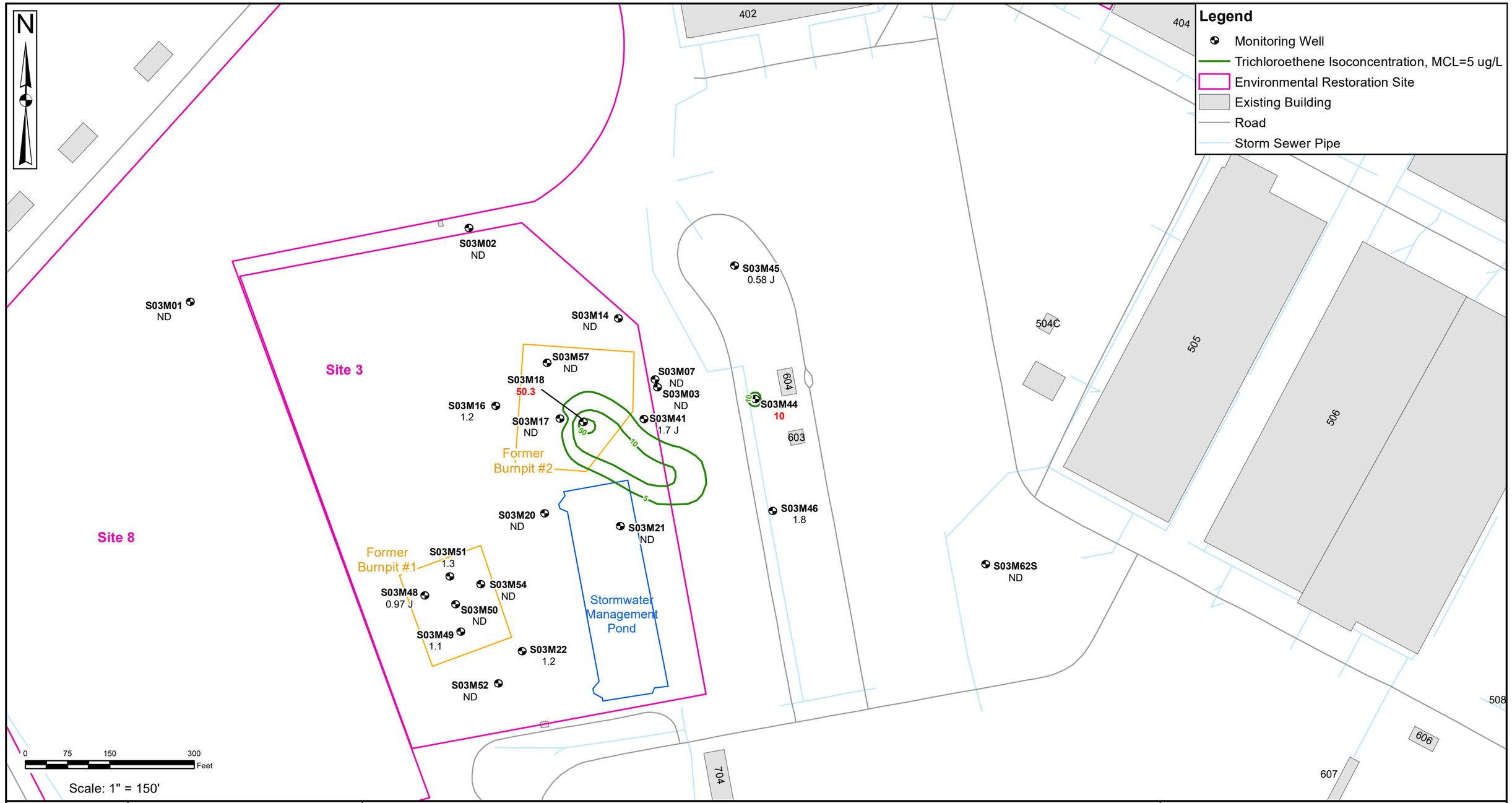
S03M68D2
402.61

403

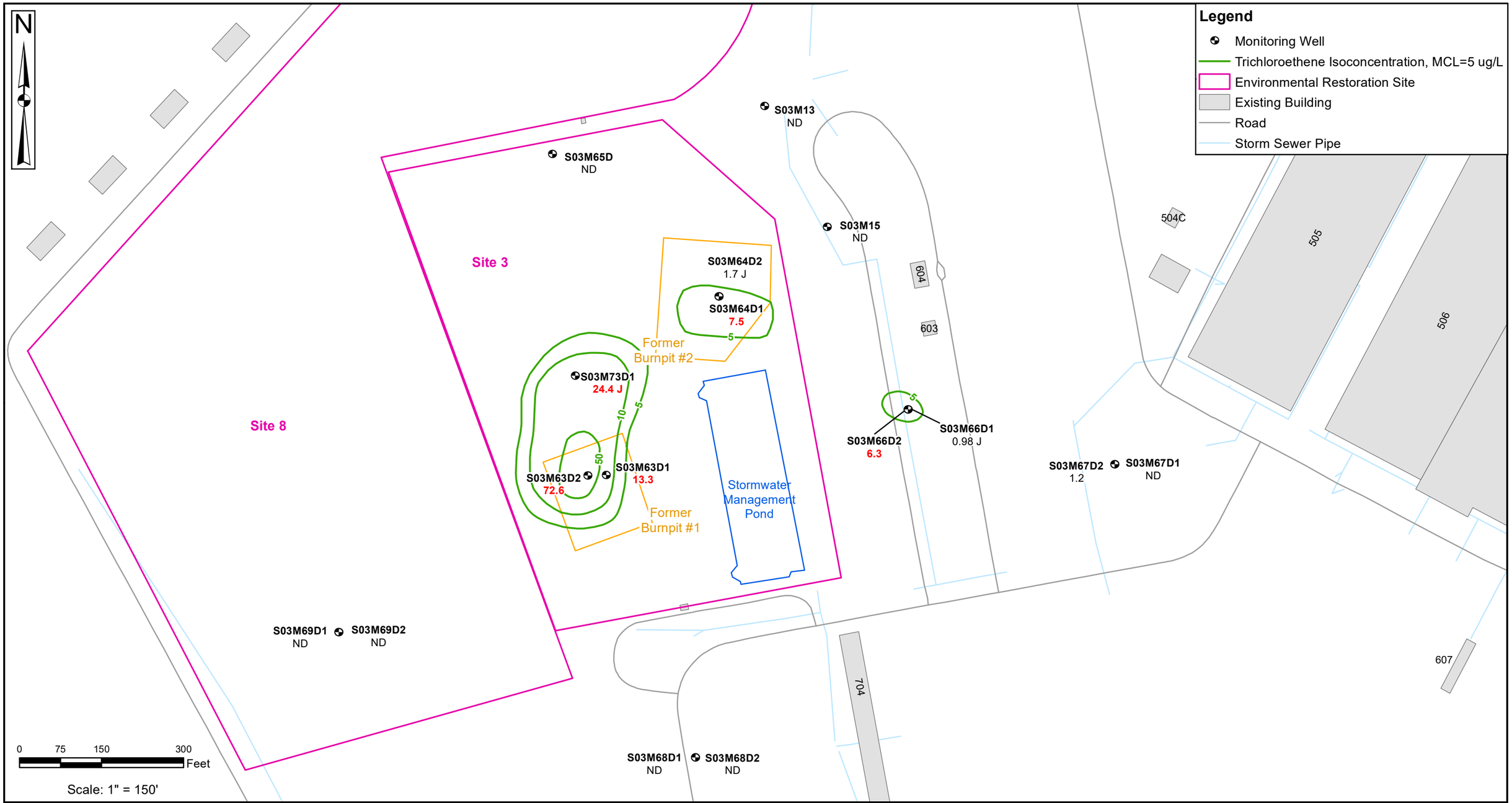
0 100 200 400
Feet

Scale: 1" = 200'

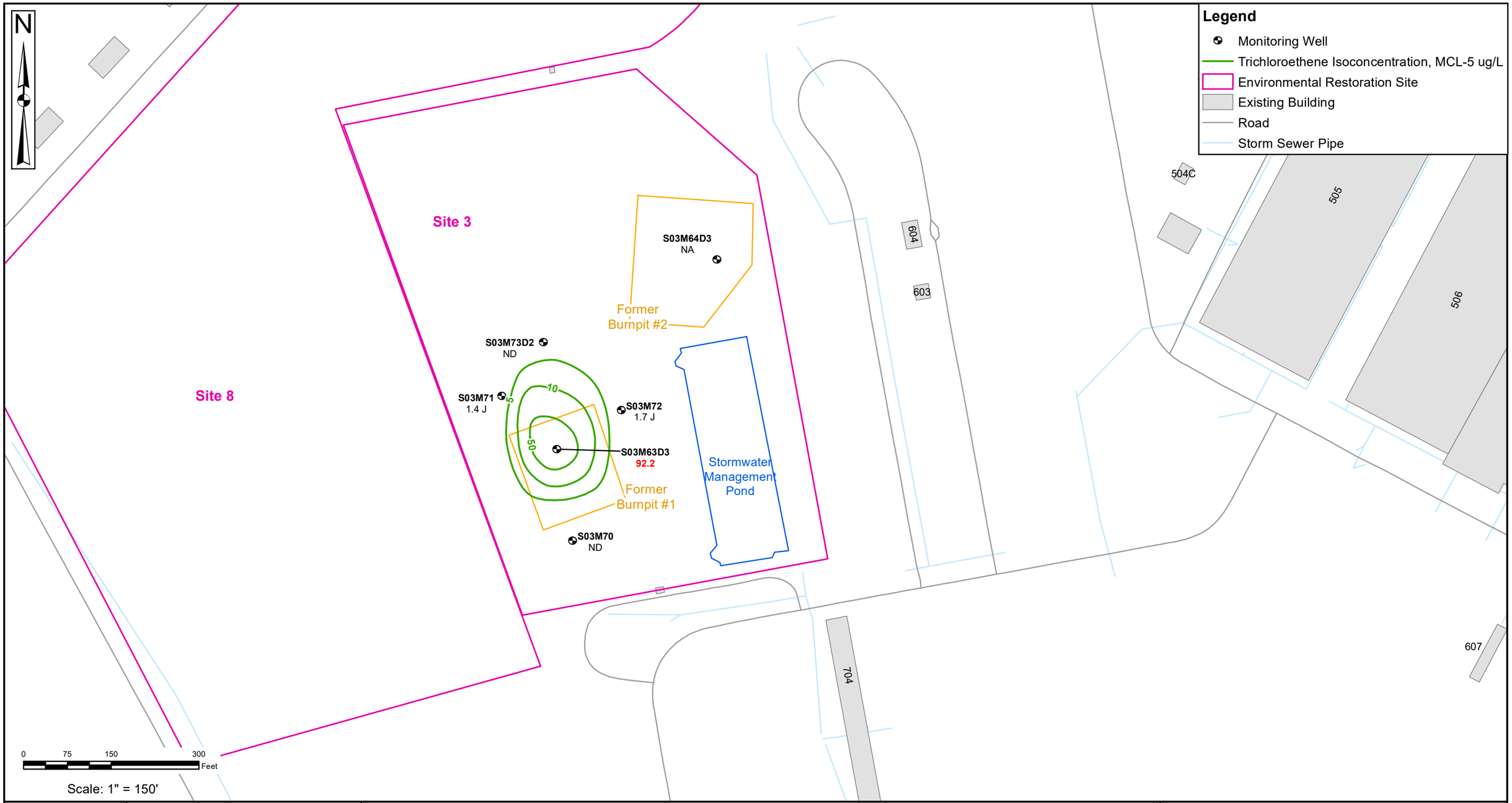
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 10/30/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	NOTES AND SOURCES: 1. Elevations in **bold red** text were used in contouring the intermediate / deep pontentiometric surface 2. All groundwater elevations are in units of feet referenced to the National Geodetic Vertical Datum (NGVD)	Potentiometric Surface Map - Intermediate/Deep Wells June 23, 2020 Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 4-2 AMS RHEA JV



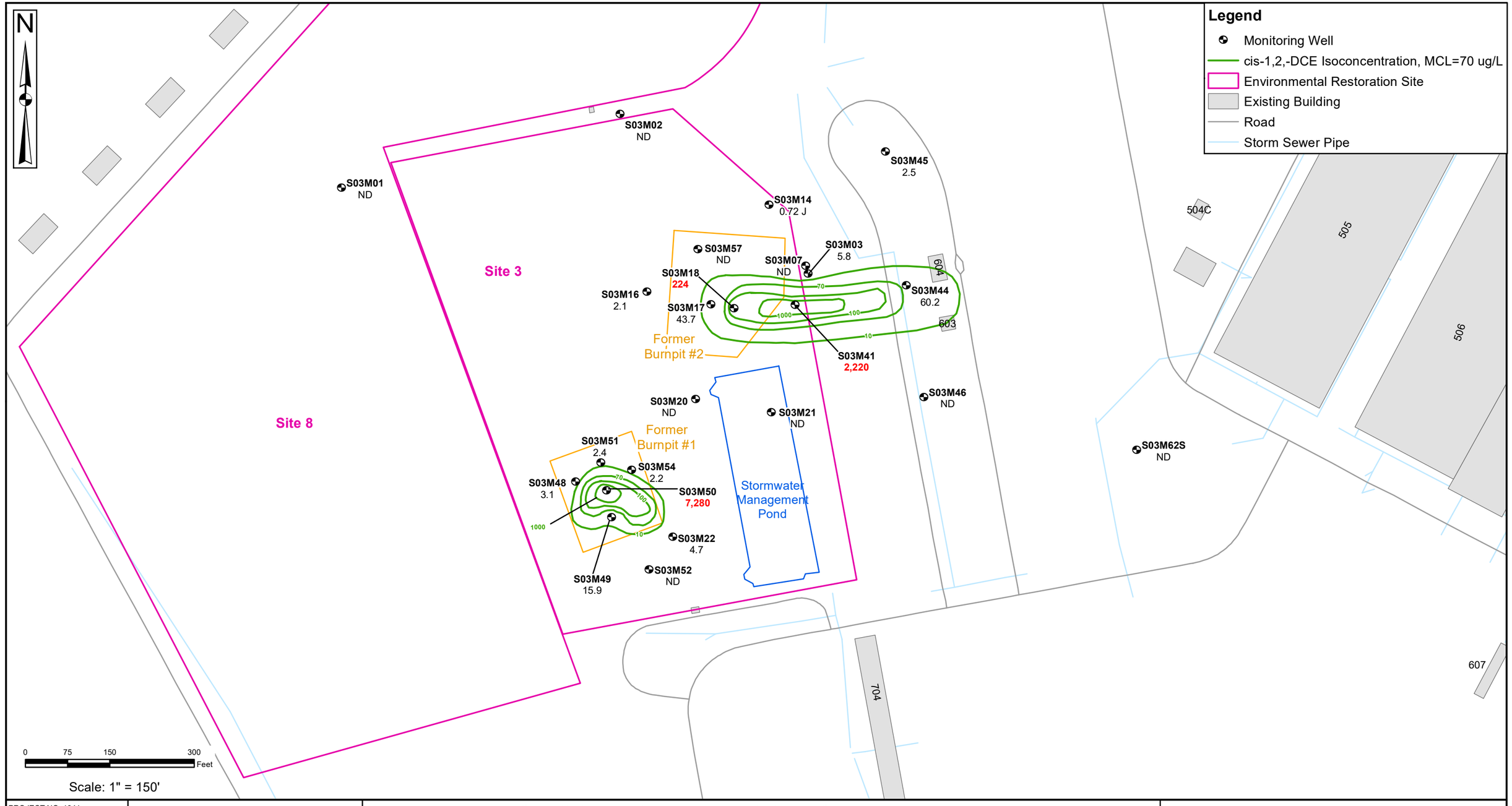
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 8/4/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	**NOTES AND SOURCES:** 1. Trichloroethene (TCE) concentrations that exceeded the Maximum Contaminant Level (MCL) of 5 ug/L are shown in **bold red** text 2. TCE concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at a concentration greater than the detection limit 5. The shallow hydrostratigraphic interval shown is represented by monitoring wells screened from 7 to 110 feet below ground surface.	Trichloroethene Isoconcentrations - Shallow Wells June 2020 Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 6-1a AMS RHEA JV



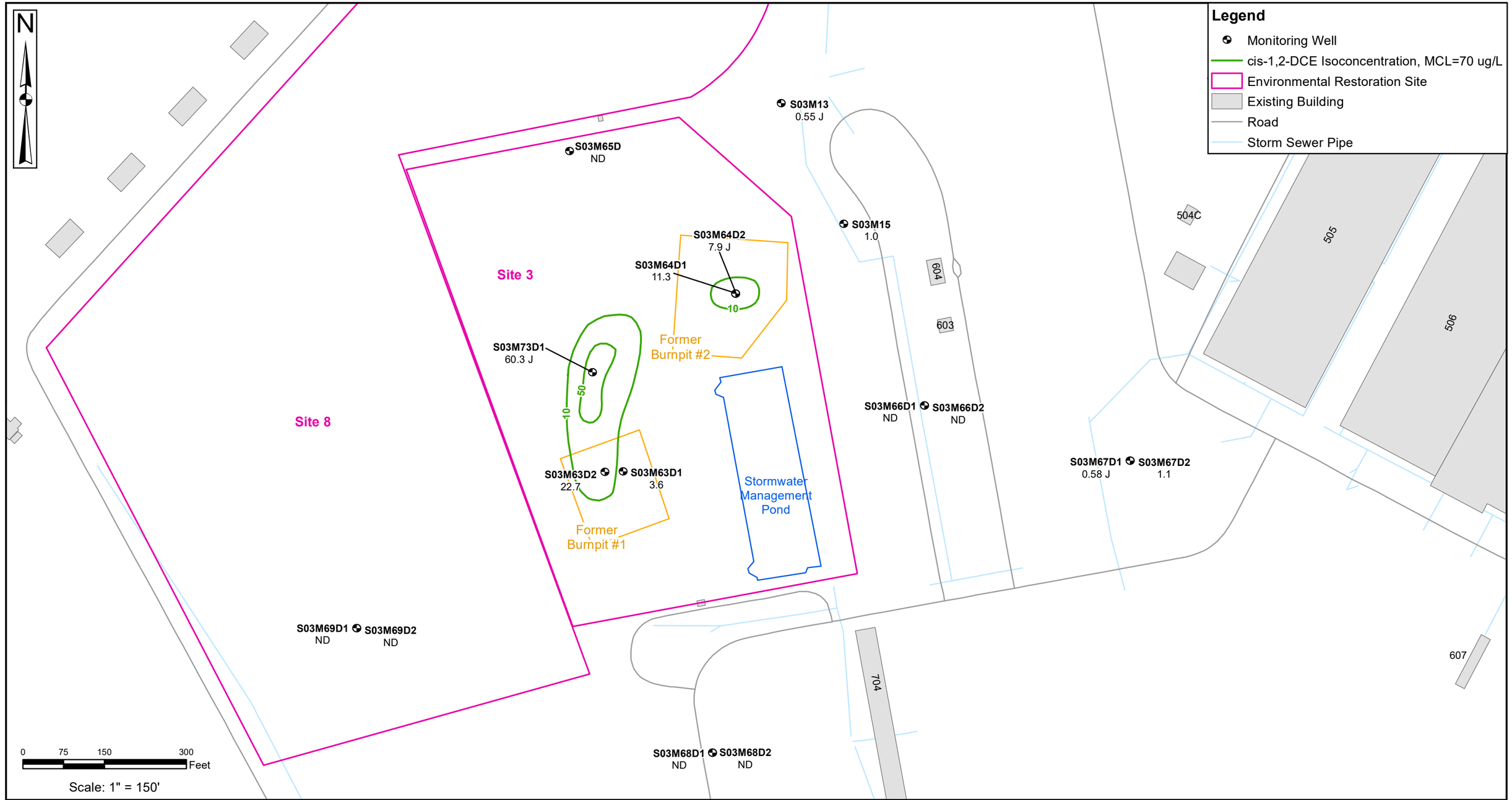
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 8/4/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	**NOTES AND SOURCES:** 1. Trichloroethene (TCE) concentrations that exceeded the Maximum Contaminant Level (MCL) of 5 ug/L are shown in **bold red** text 2. TCE concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at a concentration greater than the detection limit 5. The intermediate hydrostratigraphic interval shown is represented by monitoring wells screened from 145 to 270 feet below ground surface.	Trichloroethene Isoconcentrations - Intermediate Wells June 2020 Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 6-1b AMS RHEA JV



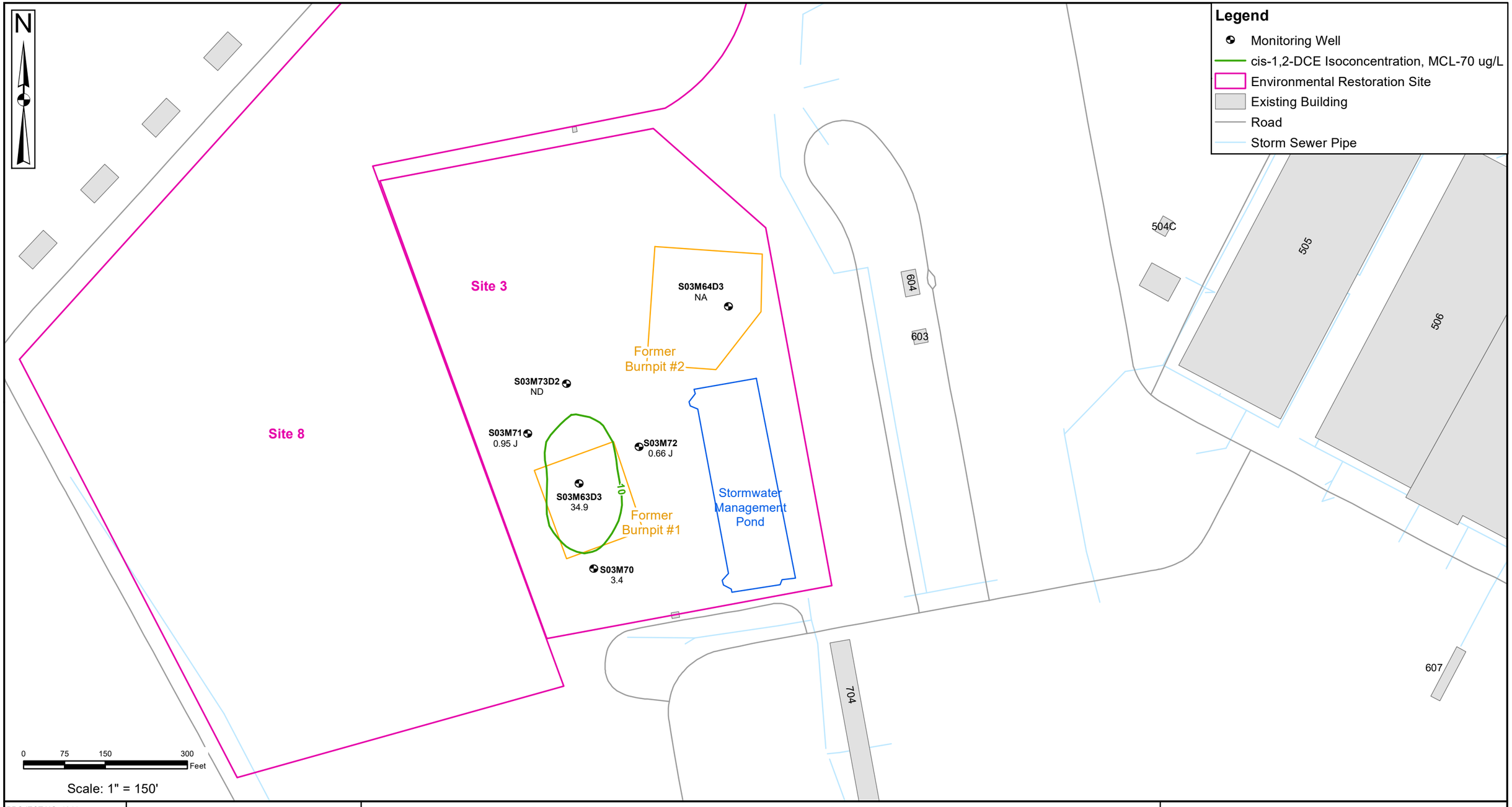
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 8/4/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	**NOTES AND SOURCES:** 1. Trichloroethene (TCE) concentrations that exceeded the Maximum Contaminant Level (MCL) of 5 ug/L are shown in **bold red** text 2. TCE concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at a concentration greater than the detection limit 5. Monitoring well S03M64D3 was found to be compromised during the sampling event and was not sampled 6. The deep hydrostratigraphic interval shown is represented by monitoring wells screened from 300 to 358 feet below ground surface.	Trichloroethene Isoconcentrations - Deep Wells June 2020 Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 6-1c AMS RHEA JV



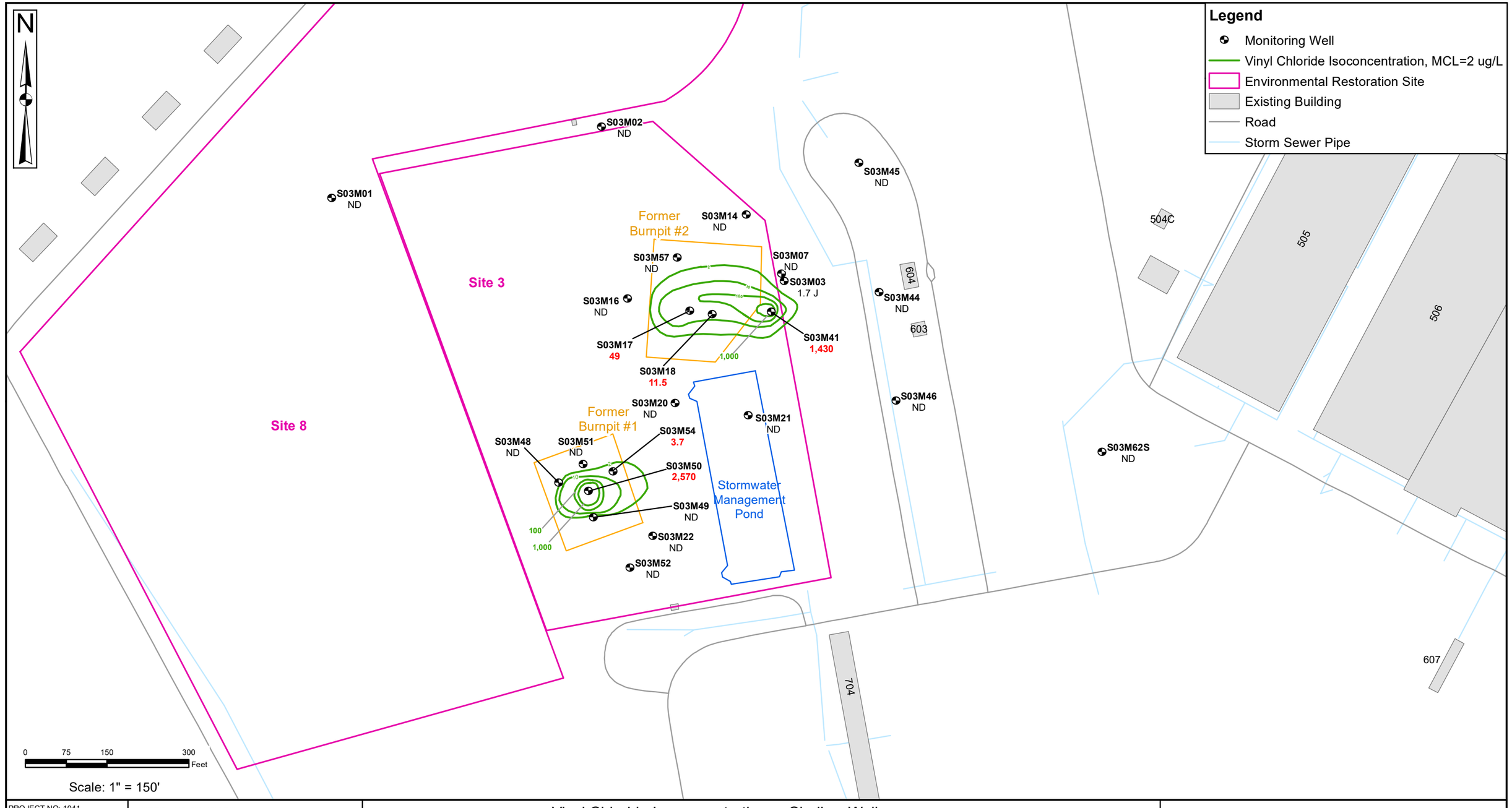
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 10/30/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	**NOTES AND SOURCES:** 1. Cis-1,2-Dichloroethene (cis-1,2-DCE) concentrations that exceeded the Maximum Contaminant Level (MCL) of 70 ug/L are shown in **bold red** text 2. Cis-1,2-DCE concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at concentration greater than the detection limit 5. The shallow hydrostratigraphic interval shown is represented by monitoring wells screened from 7 to 110 feet below ground surface.	Cis-1,2-Dichloroethene Isoconcentrations - Shallow Wells June 2020 Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 6-2a AMS RHEA JV



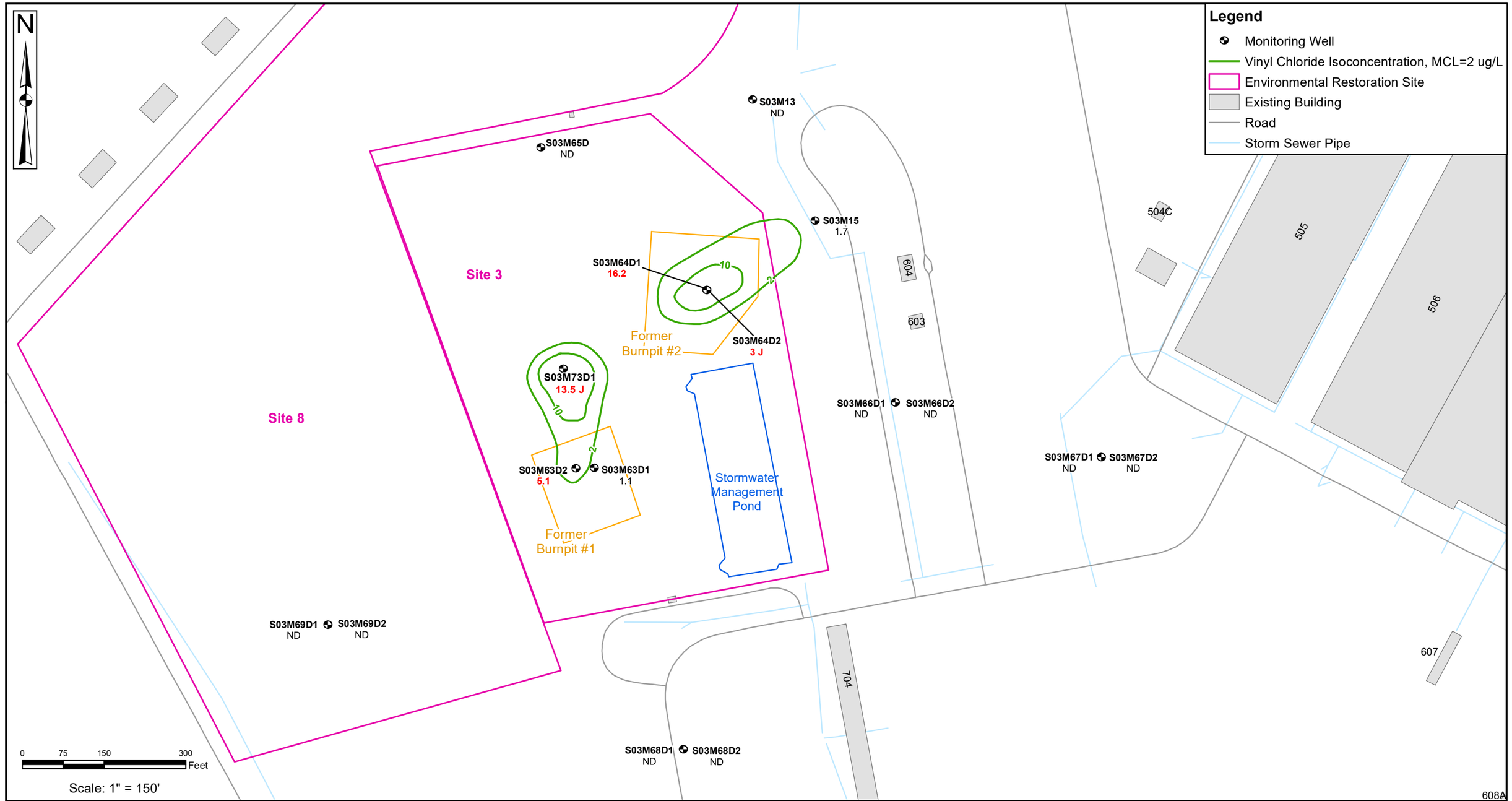
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 8/4/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	**NOTES AND SOURCES:** 1. Cis-1,2-Dichloroethene (cis-1,2-DCE) concentrations that exceeded the Maximum Contaminant Level (MCL) of 70 ug/L are shown in **bold red** text 2. Cis-1,2-DCE concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at concentration greater than the detection limit 5. The intermediate hydrostratigraphic interval shown is represented by monitoring wells screened from 145 to 270 feet below ground surface.	Cis-1,2-Dichloroethene Isoconcentrations - Intermediate Wells June 2020 Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 6-2b AMS RHEA JV



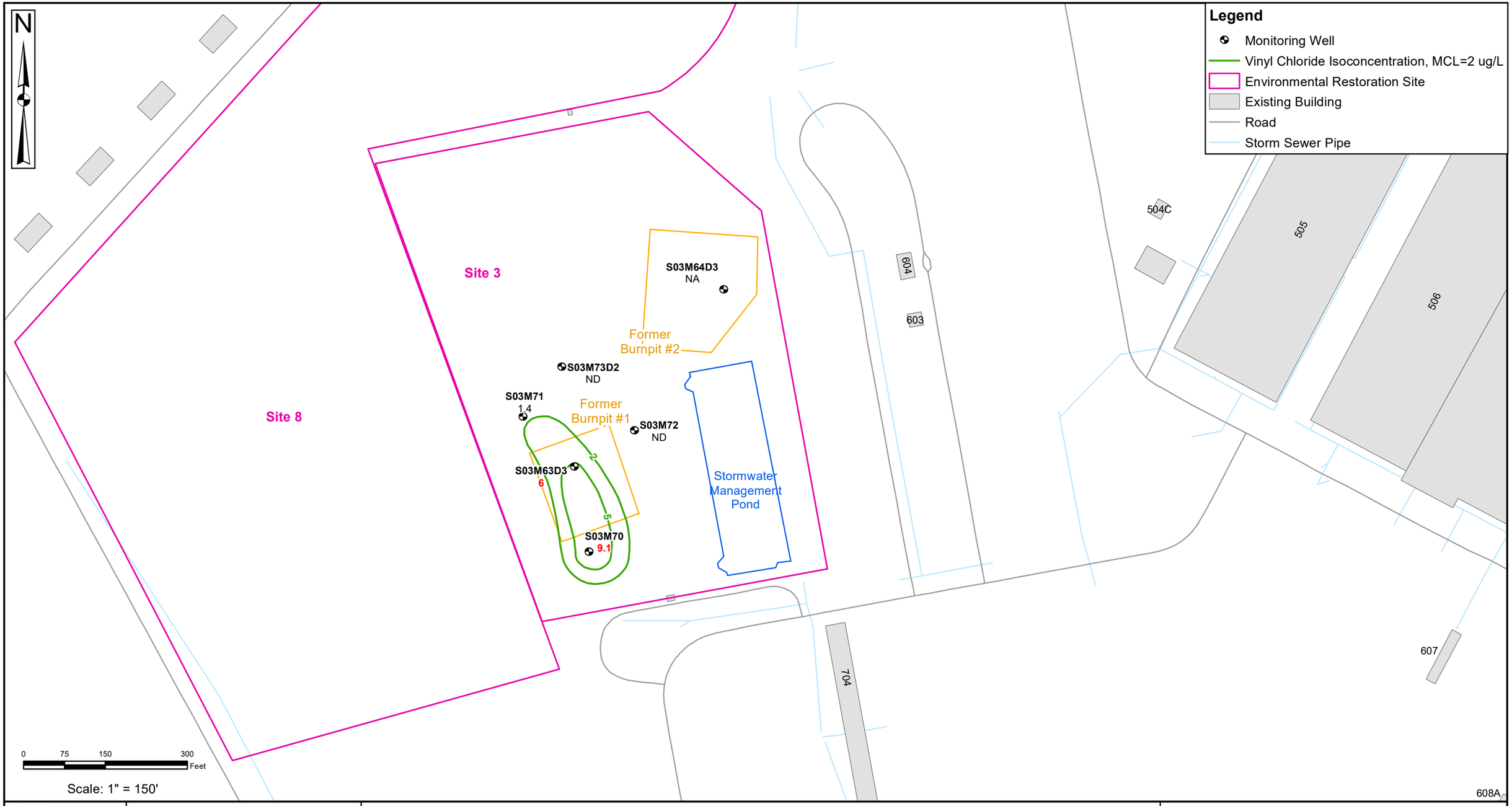
PROJECT NO: 1041	**NOTES AND SOURCES:** 1. Cis-1,2-Dichloroethene (cis-1,2-DCE) concentrations that exceeded the Maximum Contaminant Level (MCL) of 70 ug/L are shown in **bold red** text 2. Cis-1,2-DCE concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at a concentration greater than the detection limit 5. Monitoring well S03M64D3 was found to be compromised during the sampling event and was not sampled 6. The deep hydrostratigraphic interval shown is represented by monitoring wells screened from 300 to 358 feet below ground surface.	Cis-1,2-Dichloroethene Isoconcentrations - Deep Wells June 2020	FIGURE 6-2c
PREPARED FOR: NAVY			
DATE: 8/4/2020			
DRAWN BY: ZW			
CHK'D BY: MS		Site 3 Naval Support Activity Mechanicsburg, PA	AMS RHEA JV
APP'D BY: BM			



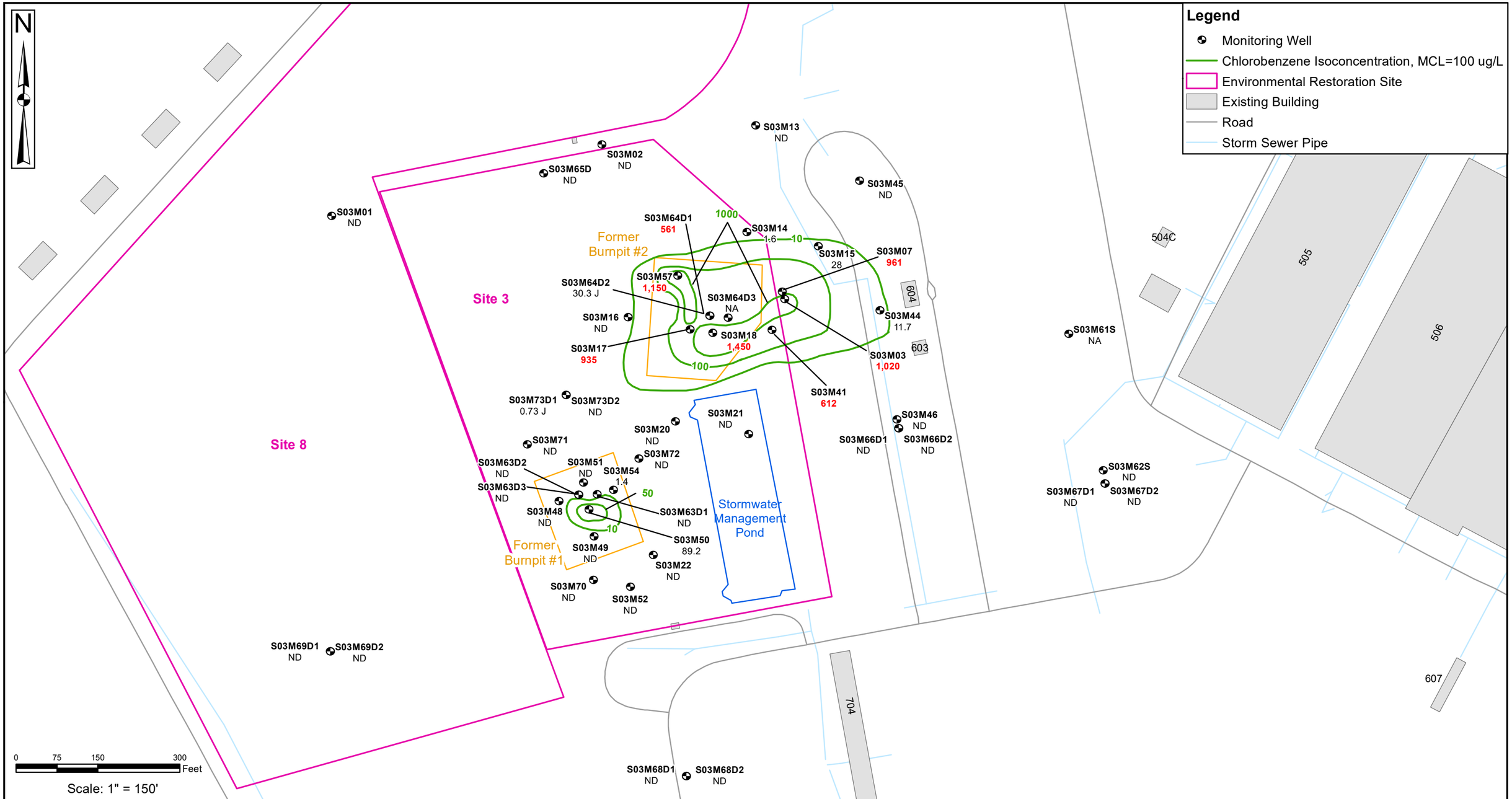
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 8/4/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	**NOTES AND SOURCES:** 1. Vinyl chloride concentrations that exceeded the Maximum Contaminant Level (MCL) of 2 ug/L are shown in **bold red** text 2. Vinyl chloride concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at a concentration greater than the detection limit 5. The shallow hydrostratigraphic interval shown is represented by monitoring wells screened from 7 to 110 feet below ground surface.	Vinyl Chloride Isoconcentrations - Shallow Wells June 2020 Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 6-3a AMS RHEA JV



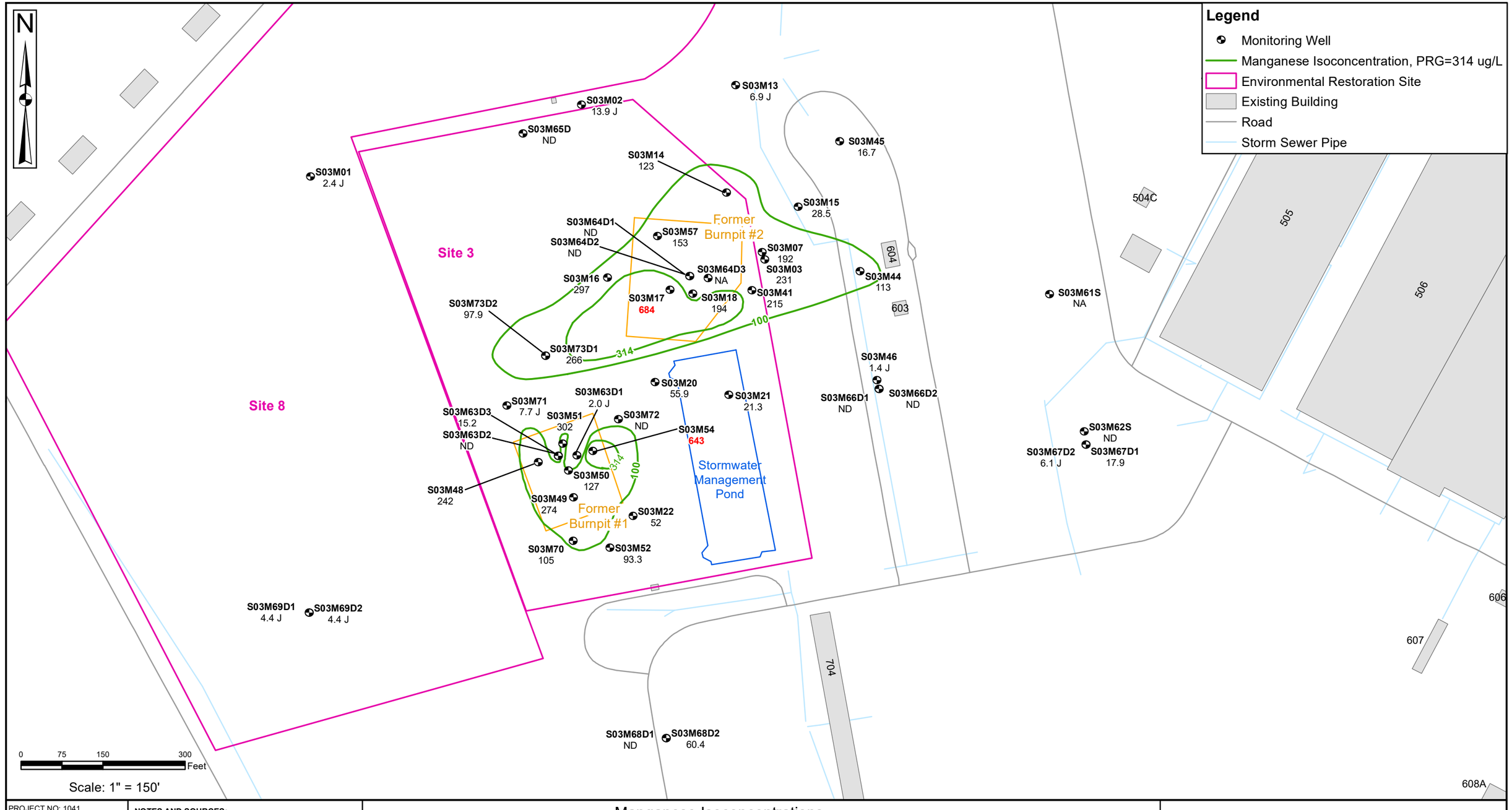
PROJECT NO: 1041	**NOTES AND SOURCES:** 1. Vinyl chloride concentrations that exceeded the Maximum Contaminant Level (MCL) of 2 ug/L are shown in **bold red** text 2. Vinyl chloride concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at a concentration greater than the detection limit 5. The intermediate hydrostratigraphic interval shown is represented by monitoring wells screened from 145 to 270 feet below ground surface.	Vinyl Chloride Isoconcentrations - Intermediate Wells June 2020	FIGURE 6-3b
PREPARED FOR: NAVY			
DATE: 8/4/2020			
DRAWN BY: ZW			
CHK'D BY: MS		Site 3 Naval Support Activity Mechanicsburg, PA	AMS RHEA JV
APP'D BY: BM			



PROJECT NO: 1041	**NOTES AND SOURCES:** 1. Vinyl chloride concentrations that exceeded the Maximum Contaminant Level (MCL) of 2 ug/L are shown in **bold red** text 2. Vinyl chloride concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at a concentration greater than the detection limit 5. Monitoring well S03M64D3 was found to be compromised during the sampling event and was not sampled 6. The deep hydrostratigraphic interval shown is represented by monitoring wells screened from 300 to 358 feet below ground surface.	Vinyl Chloride Isoconcentrations - Deep Wells June 2020	FIGURE 6-3c
PREPARED FOR: NAVY			
DATE: 8/4/2020			
DRAWN BY: ZW		Site 3 Naval Support Activity Mechanicsburg, PA	AMS RHEA JV
CHK'D BY: MS			
APP'D BY: BM			



PROJECT NO: 1041	**NOTES AND SOURCES:** 1. Chlorobenzene concentrations that exceeded the Maximum Contaminant Level (MCL) of 100 ug/L are shown in **bold red** text 2. Chlorobenzene concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected down to the Method Detection Limit (MDL) 5. Monitoring well S03M64D3 was found to be compromised during the sampling event and was not sampled 6. Monitoring well S03M61S did not contain a sufficient volume of water and was not sampled	Chlorobenzene Isoconcentrations June 2020	FIGURE 6-4
PREPARED FOR: NAVY			
DATE: 8/4/2020			
DRAWN BY: ZW			
CHK'D BY: MS		Site 3 Naval Support Activity Mechanicsburg, PA	AMS RHEA JV
APP'D BY: BM			



PROJECT NO: 1041	
PREPARED FOR: NAVY	
DATE: 8/4/2020	
DRAWN BY: ZW	
CHK'D BY: MS	
APP'D BY: BM	

NOTES AND SOURCES:

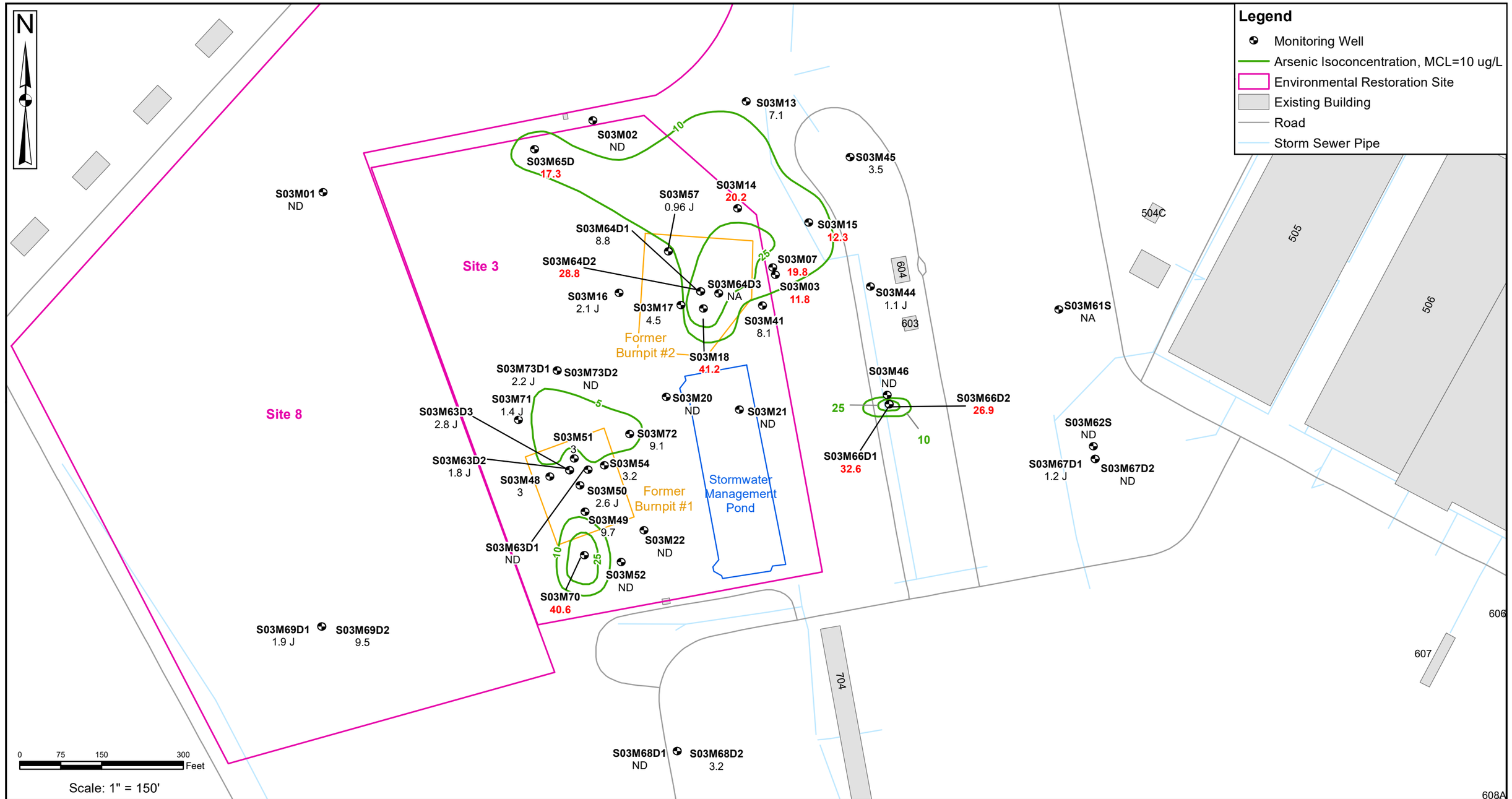
1. Manganese concentrations that exceeded the Preliminary Remedial Goal (PRG) of 314 ug/L are shown in **bold red** text
2. Manganese concentrations are reported in ug/L
3. J = Estimated concentration
4. ND = Not detected at a concentration greater than the detection limit
5. Monitoring well S03M64D3 was found to be compromised during the sampling event and was not sampled
6. Monitoring well S03M61S did not contain a sufficient volume of water and was not sampled

Manganese Isoconcentrations June 2020

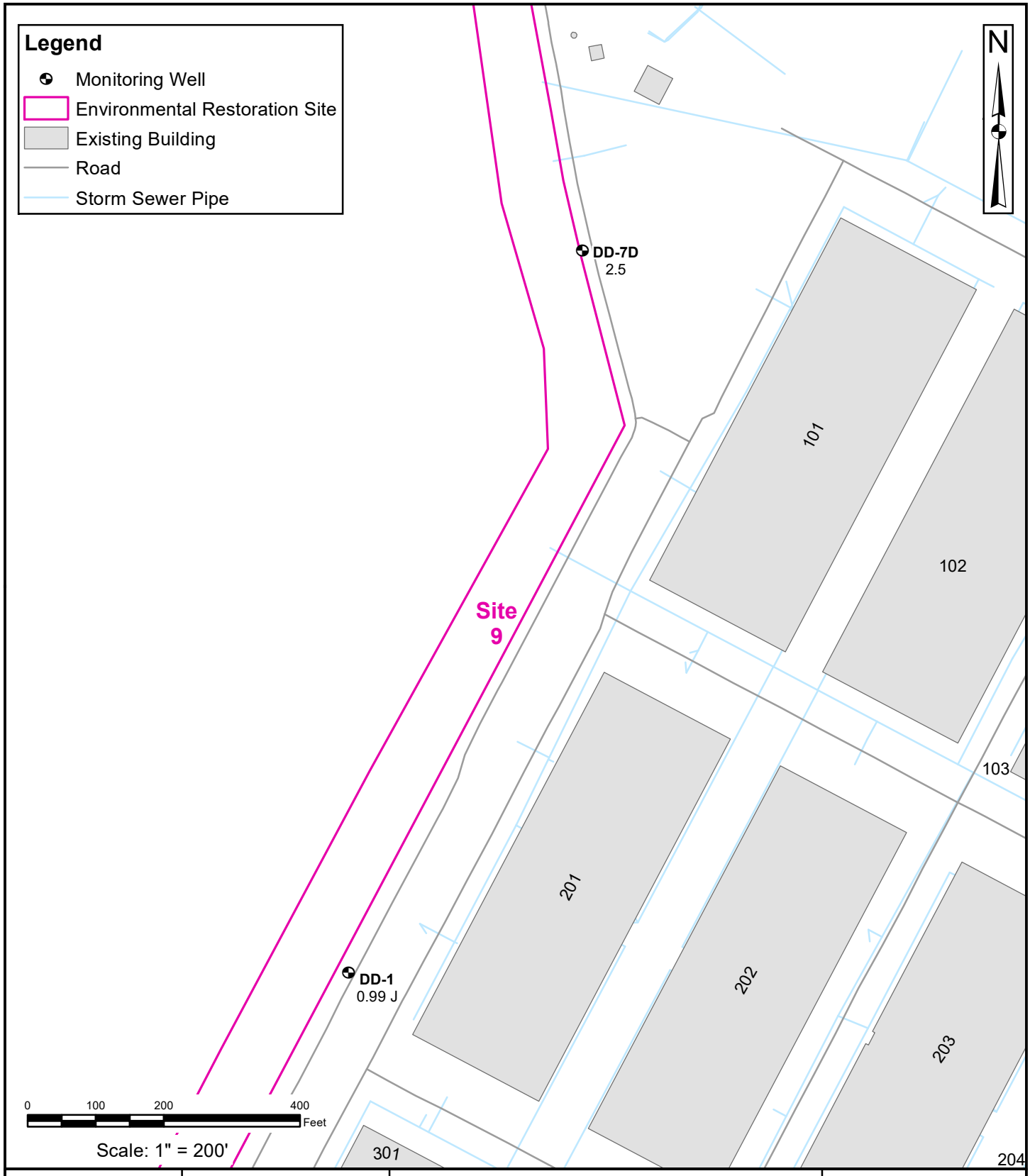
Site 3 Naval Support Activity Mechanicsburg, PA

FIGURE 6-5

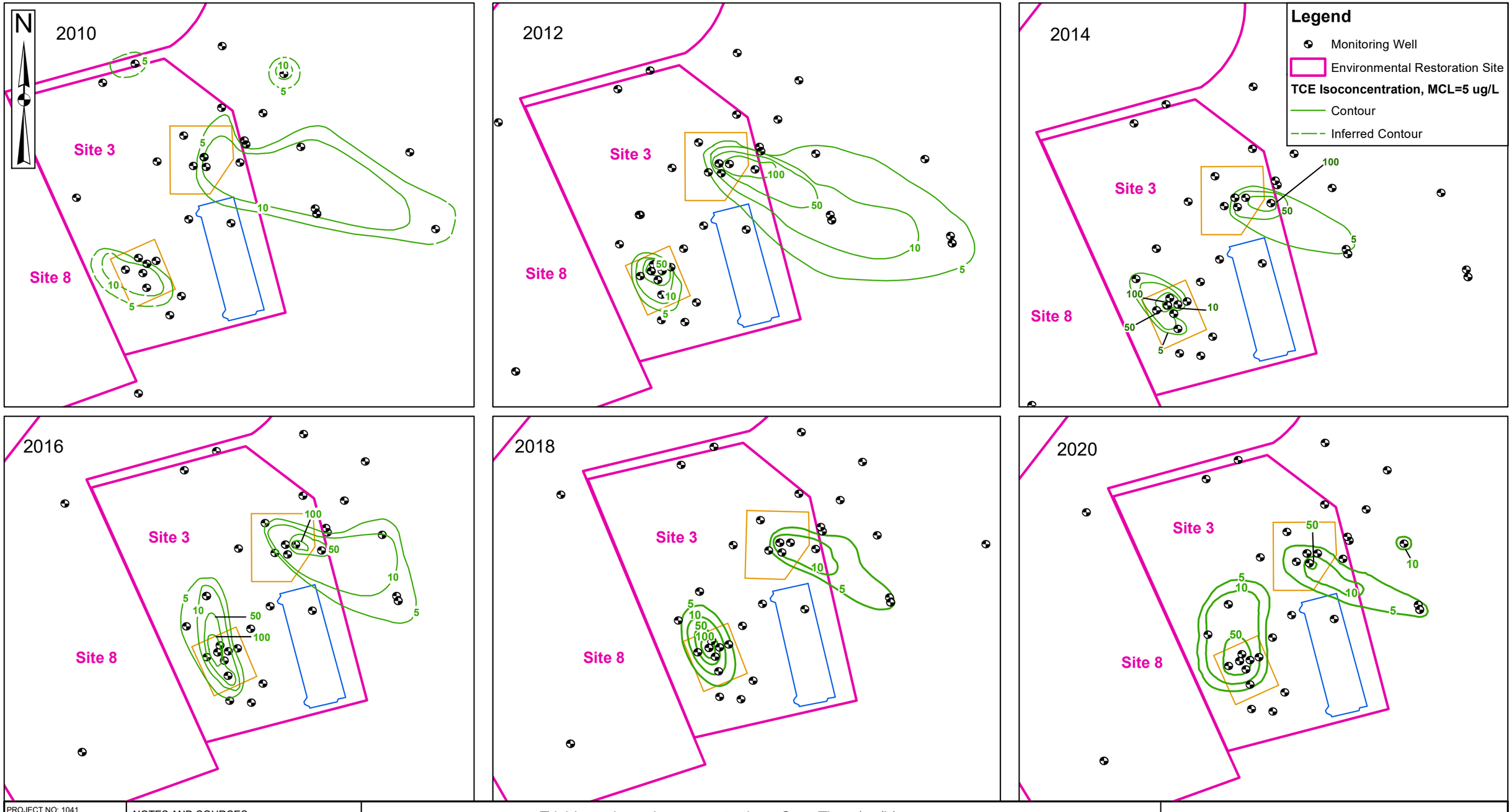
AMS RHEA JV



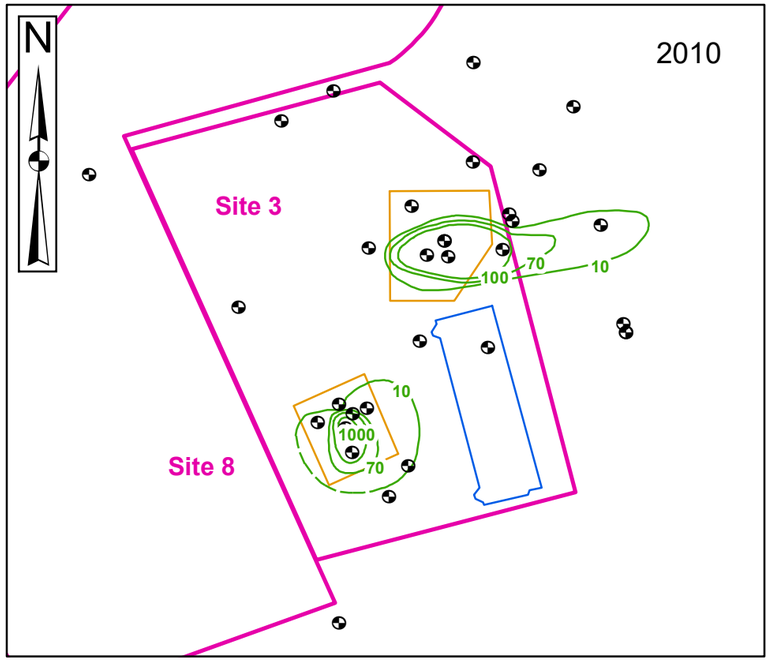
PROJECT NO: 1041	**NOTES AND SOURCES:** 1. Arsenic concentrations that exceeded the Maximum Contaminant Level (MCL) of 10 ug/L are shown in **bold red** text 2. Arsenic concentrations are reported in ug/L 3. J = Estimated concentration 4. ND = Not detected at a concentration greater than the detection limit 5. Monitoring well S03M64D3 was found to be compromised during the sampling event and was not sampled 6. Monitoring well S03M61S did not contain a sufficient volume of water and was not sampled	Arsenic Isoconcentrations June 2020	FIGURE 6-6
PREPARED FOR: NAVY			
DATE: 8/4/2020			
DRAWN BY: ZW		Site 3 Naval Support Activity Mechanicsburg, PA	AMS RHEA JV
CHK'D BY: MS			
APP'D BY: BM			

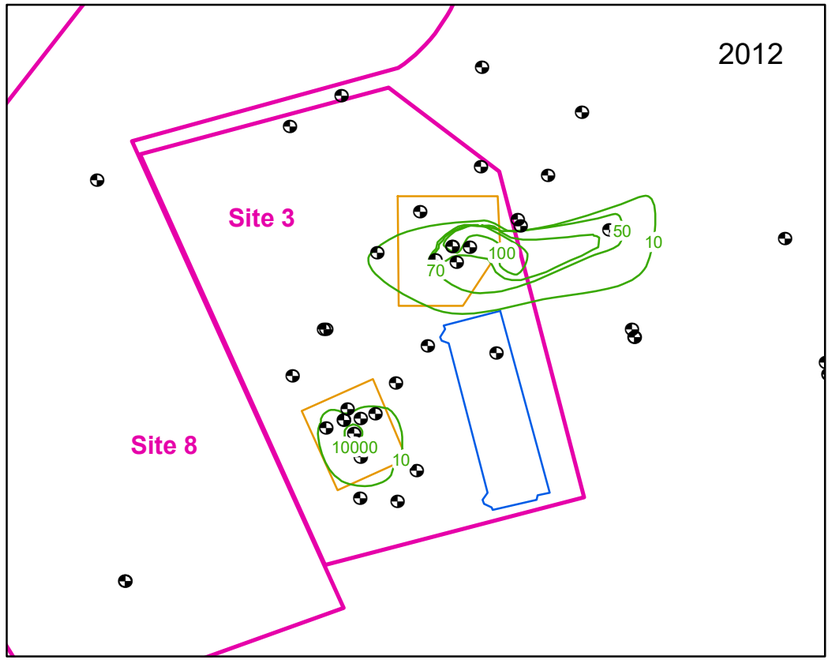


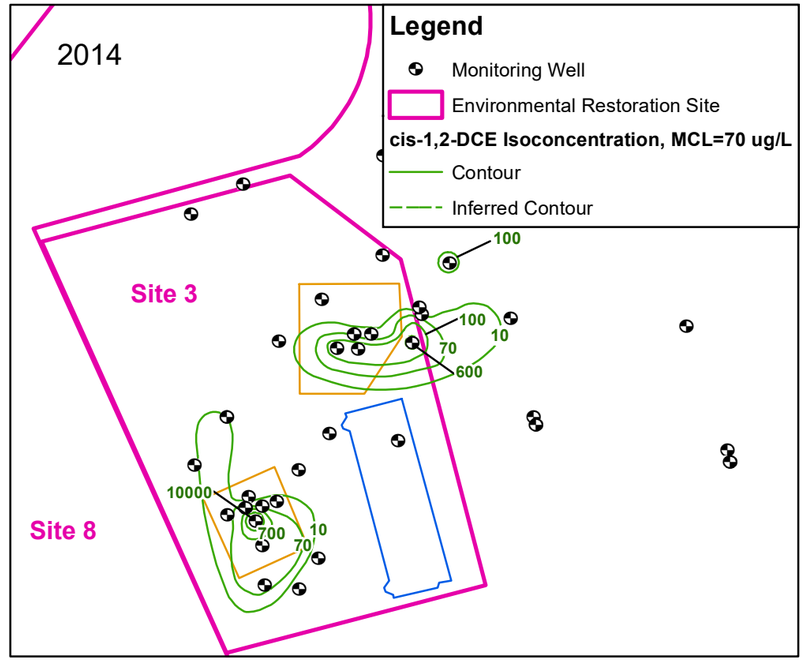
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 8/4/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	NOTES AND SOURCES: 1. Trichloroethene (TCE) concentrations that exceeded the Maximum Contaminant Level (MCL) of 5 ug/L are shown in **bold red** text 2. Trichloroethene (TCE) concentrations are reported in ug/L	Trichloroethene Isoconcentrations June 2020 Site 9 Naval Support Activity Mechanicsburg, PA	FIGURE 6-7 AMS RHEA JV

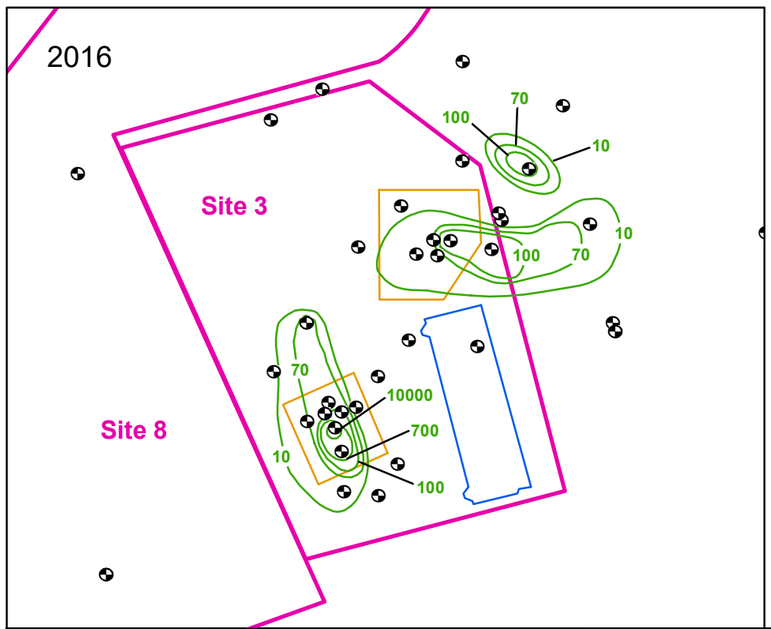


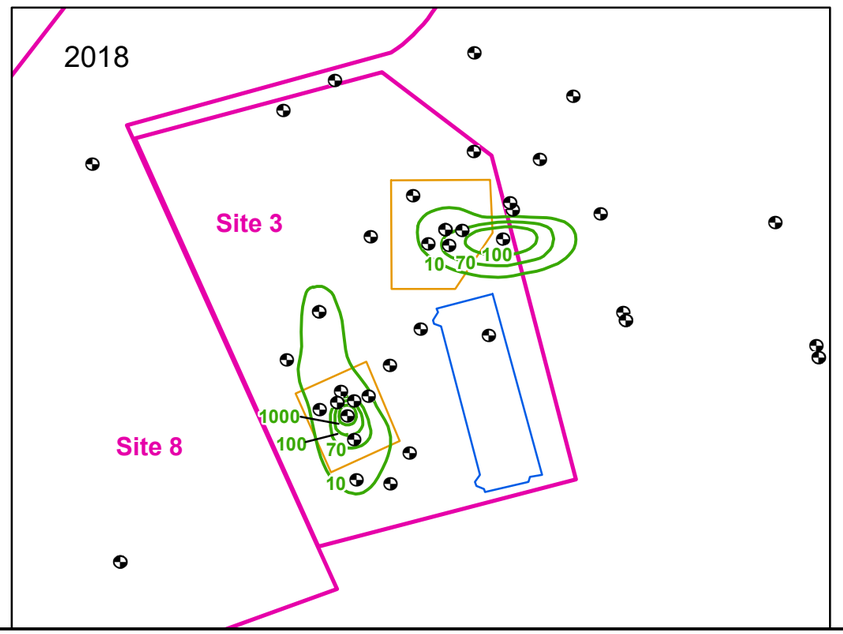
PROJECT NO: 1041	NOTES AND SOURCES: 1. Only monitoring wells that were sampled during the appropriate year are shown. 2. TCE = Trichloroethene	Trichloroethene Isoconcentrations Over Time (ug/L)	FIGURE 6-8
PREPARED FOR: NAVY			
DATE: 8/20/2020			
DRAWN BY: ZW			
CHK'D BY: MS		Site 3 Naval Support Activity Mechanicsburg, PA	
APP'D BY: BM	0 150 300 600 Feet		
	Scale: 1" = 300'		AMS RHEA JV

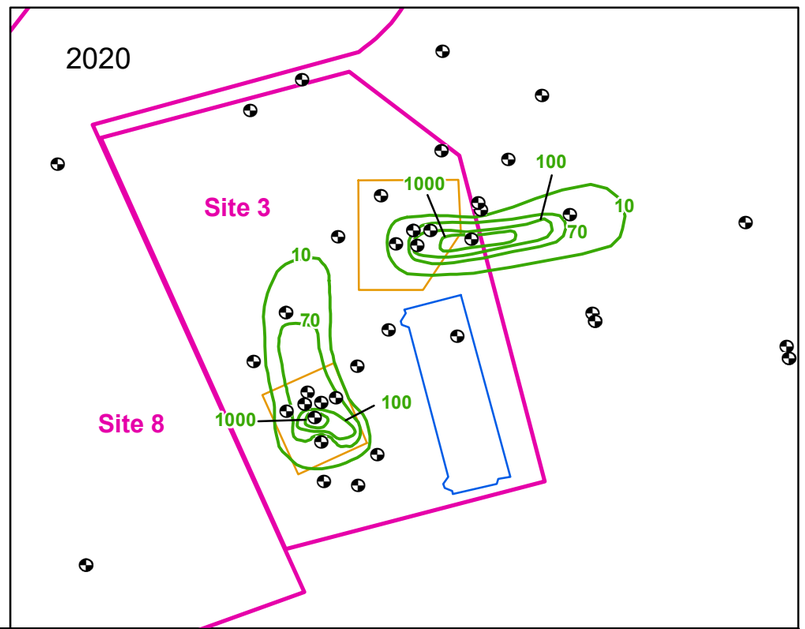




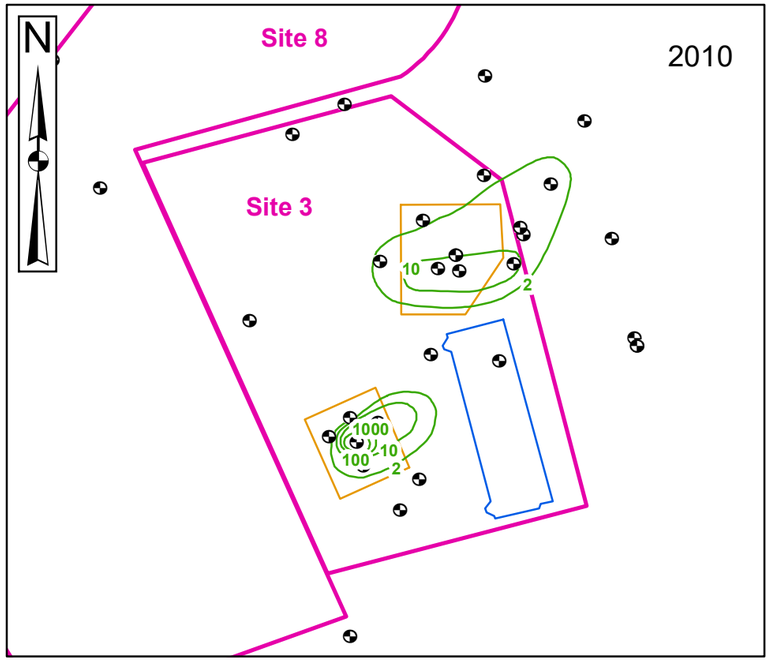


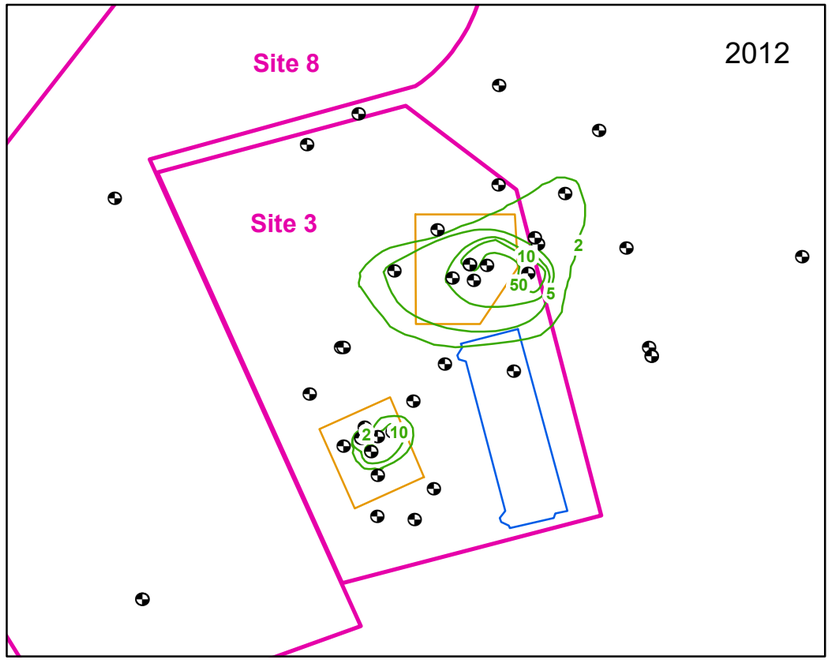


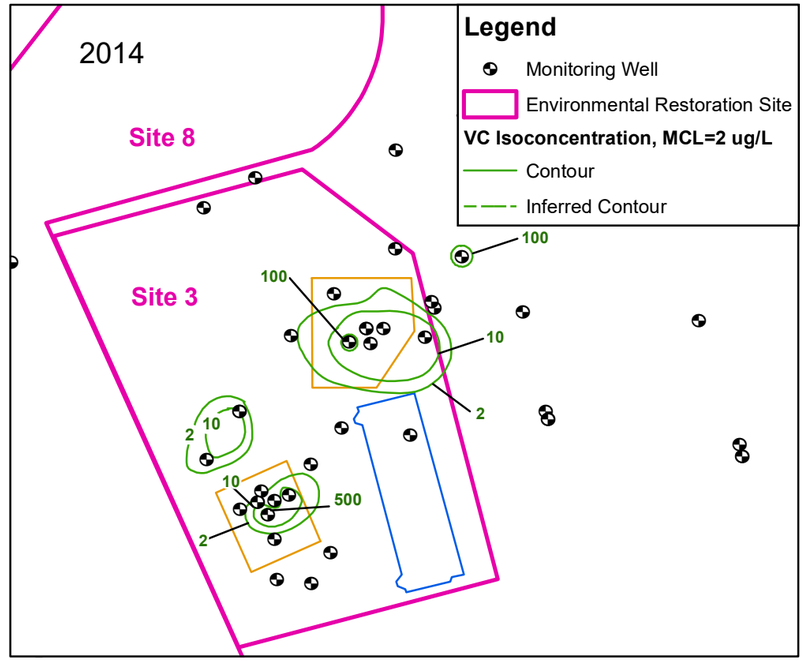


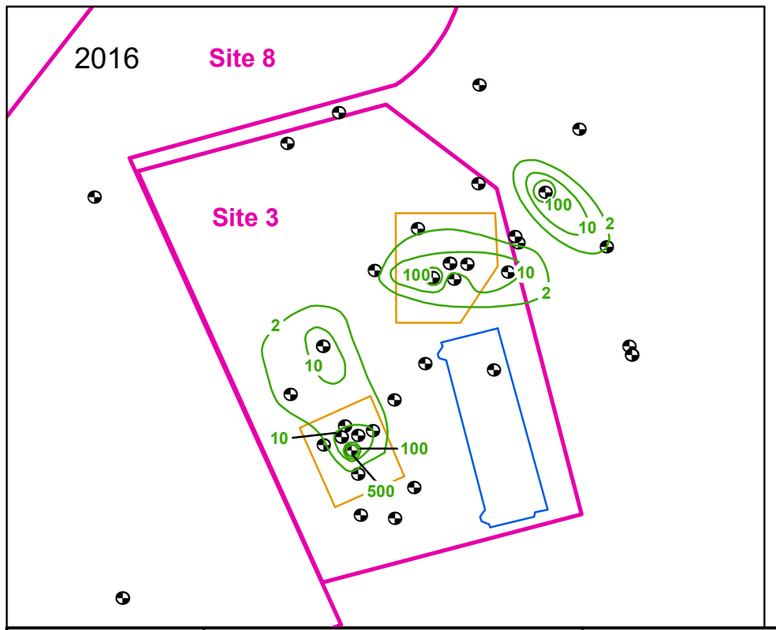


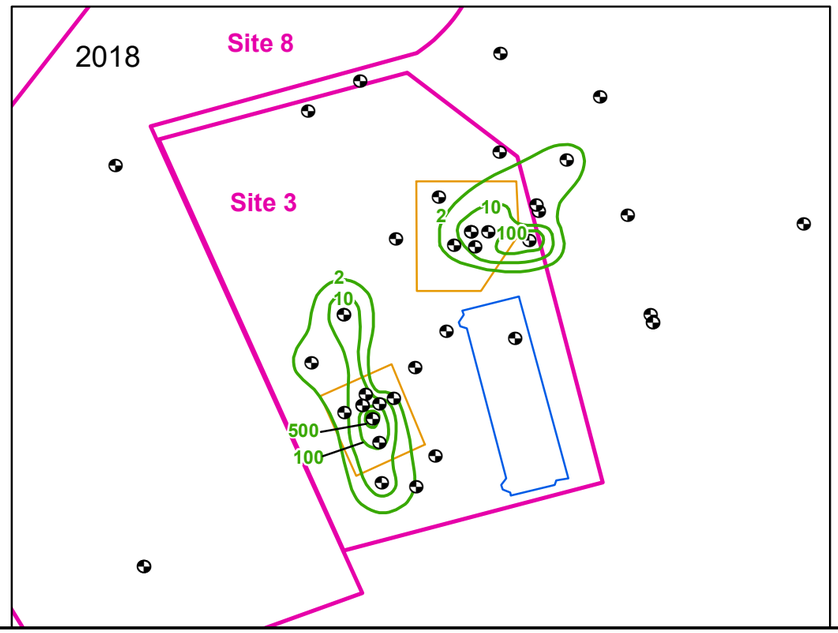
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 8/20/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	NOTES AND SOURCES: Only monitoring wells that were sampled during the appropriate year are shown. 300 150 0 300 Feet Scale: 1" = 300'	Cis-1,2-Dichloroethene Isoconcentrations Over Time (ug/L) Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 6-9 AMS RHEA JV

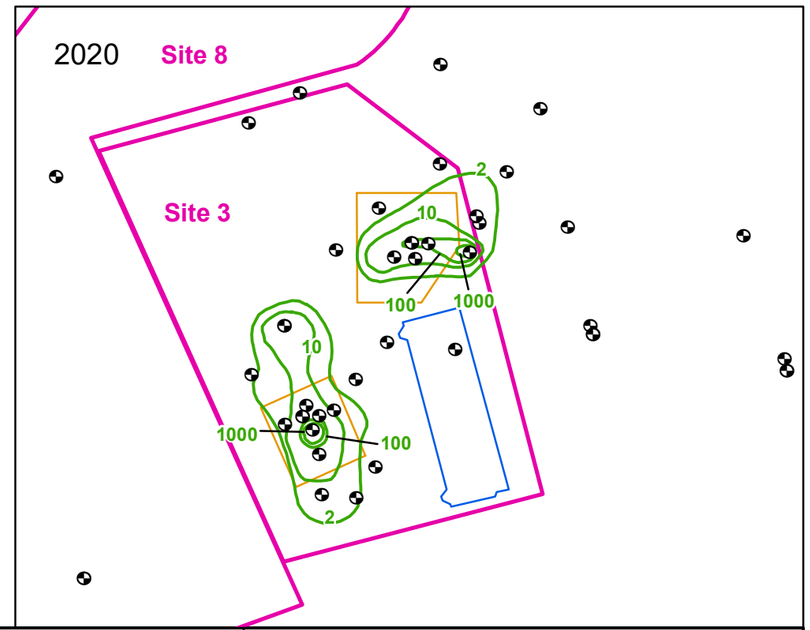




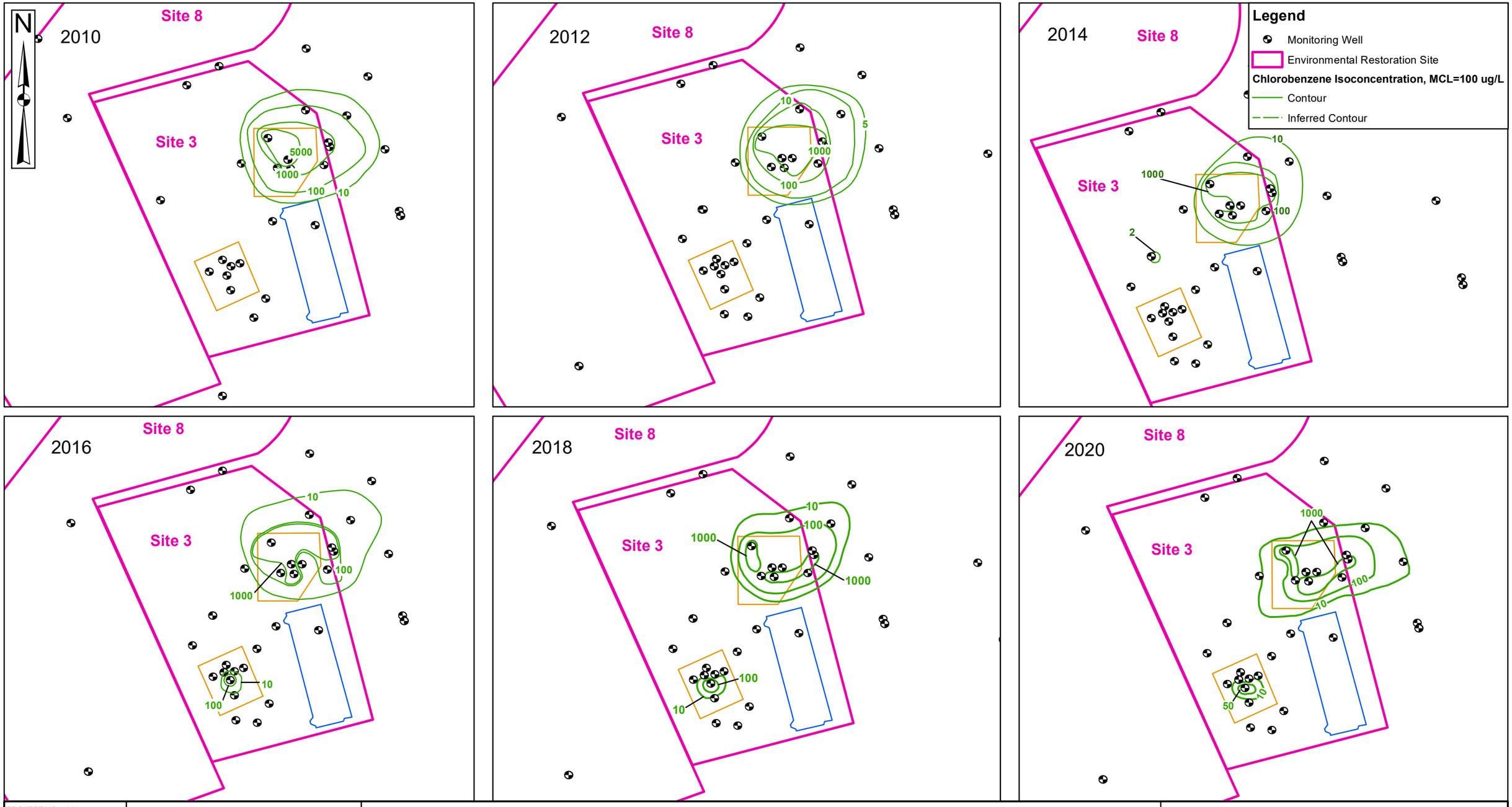




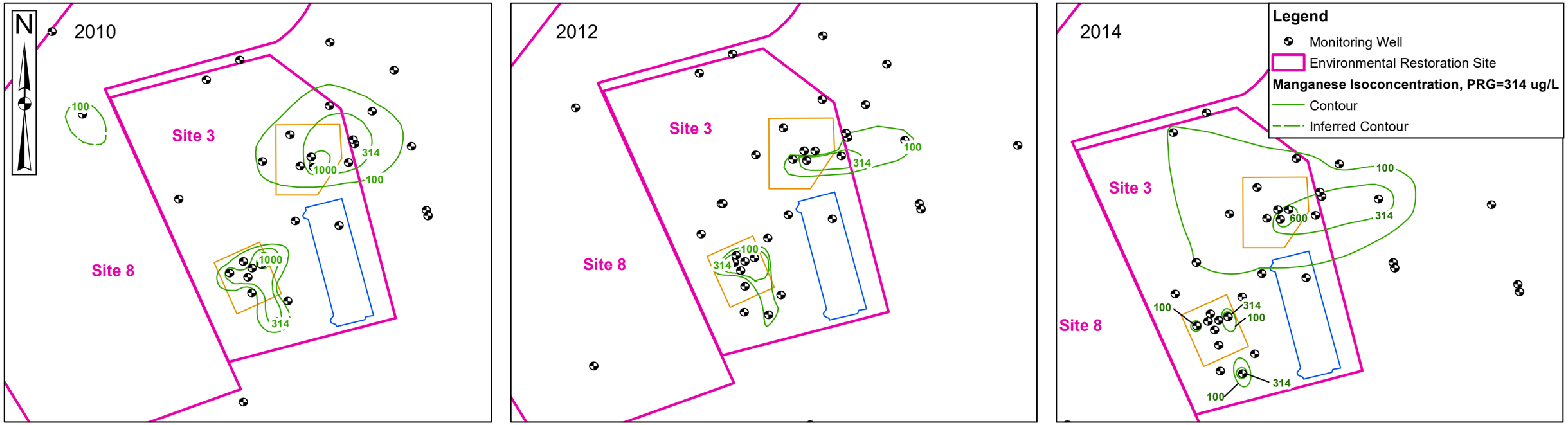




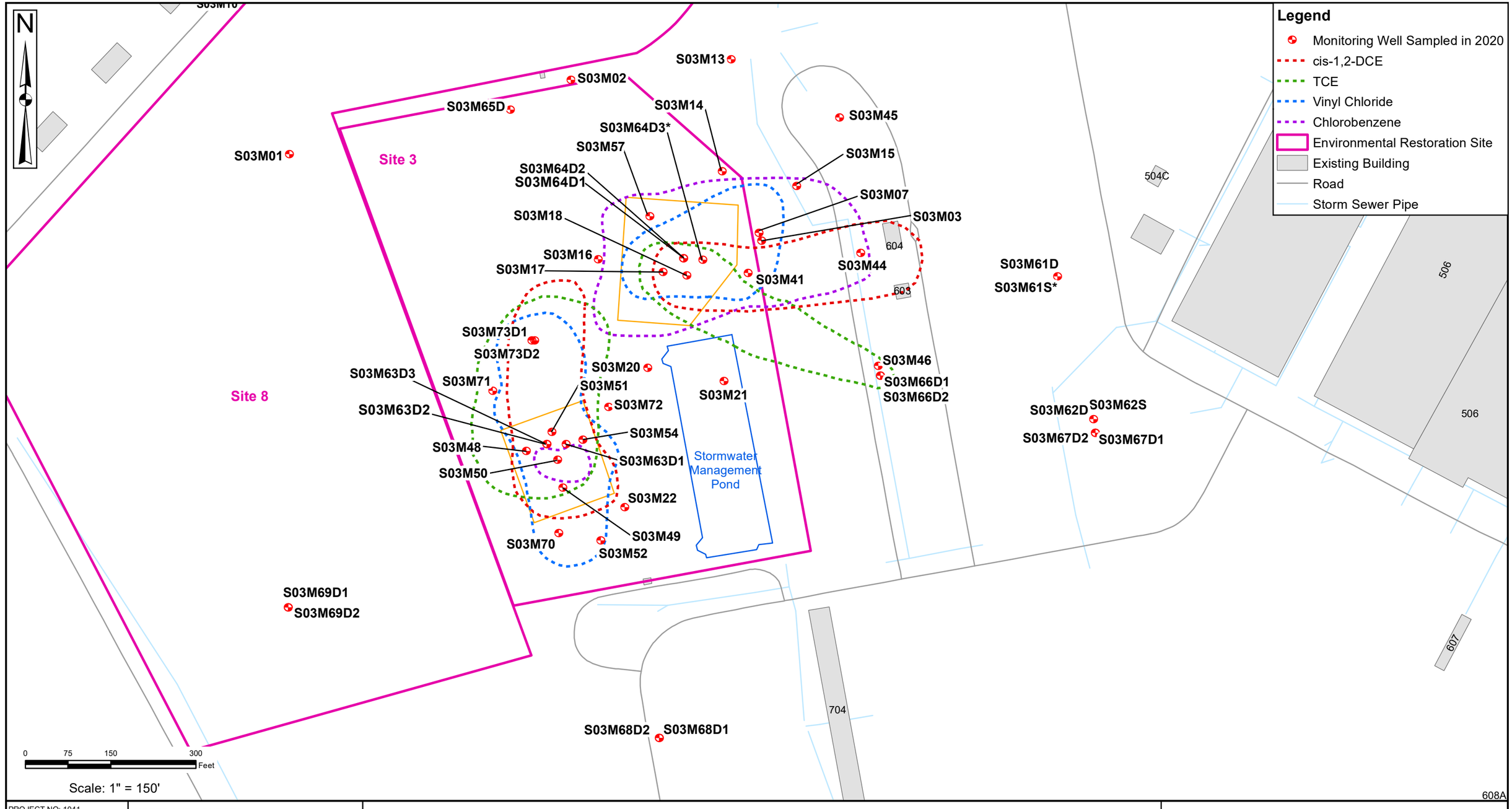
PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 8/20/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	NOTES AND SOURCES: 1. Only monitoring wells that were sampled during the appropriate year are shown. 2. VC = vinyl chloride 300 150 0 300 Feet Scale: 1" = 300'	Vinyl Chloride Isoconcentrations Over Time (ug/L) Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 6-10 AMS RHEA JV



PROJECT NO: 1041	NOTES AND SOURCES: Only monitoring wells that were sampled during the appropriate year are shown.	Chlorobenzene Isoconcentrations Over Time (ug/L)	FIGURE 6-11
PREPARED FOR: NAVY			
DATE: 8/20/2020			
DRAWN BY: ZW			
CHK'D BY: MS			
APP'D BY: BM			
	300 150 0 300 Feet Scale: 1" = 300'	Site 3 Naval Support Activity Mechanicsburg, PA	AMS RHEA JV



PROJECT NO: 1041	NOTES AND SOURCES: Only monitoring wells that were sampled during the appropriate year are shown.	Manganese Isoconcentrations Over Time (ug/L)	FIGURE 6-12
PREPARED FOR: NAVY			
DATE: 8/20/2020			
DRAWN BY: ZW			
CHK'D BY: MS	300 150 0 300 Feet	Site 3 Naval Support Activity Mechanicsburg, PA	AMS RHEA JV
APP'D BY: BM			
	Scale: 1" = 300'		



PROJECT NO: 1041 PREPARED FOR: NAVY DATE: 8/20/2020 DRAWN BY: ZW CHK'D BY: MS APP'D BY: BM	**NOTES AND SOURCES:** 1. To the north of Site 3, the wells DD-1 and DD-7D along the storm water drainage ditch were also monitored 3. DCE = dichloroethene 4. TCE = trichloroethene 5. *Monitoring wells S03M61S and S03M64D3 were unable to be sampled during the 2020 sampling event	2020 COC Maximum Plume Extent Site 3 Naval Support Activity Mechanicsburg, PA	FIGURE 6-13 AMS RHEA JV

APPENDIX A

Field Forms

APPENDIX A-1

Water Level Sheets

MONITORING WELL
GAUGING SHEET

Monitoring Well Identification	Time	Date	Sounded Depth (feet below TOR)	Depth to Water (feet below TOR)	Notes
S03M01	16:22	6/22/2020	58.50	25.58	
S03M02	11:55	6/22/2020	77.05	32.42	6 3/8" ID Steel
S03M03	12:47	6/22/2020	55.10	31.02	Removed sock, weathered, breaking down.
S03M04	13:00	6/23/2020	57.22	31.56	
S03M05	16:18	6/22/2020	112.60	26.45	
S03M06	12:04	6/22/2020	132.40	39.48	
S03M07	12:15	6/22/2020	106.85	31.05	
S03M08	11:12	6/22/2020	109.10	30.58	
S03M10	16:28	6/22/2020	111.05	23.52	4" ID PVC
S03M11	9:55	7/1/2020	97.00	26.67	
S03M13	12:34	6/22/2020	250.18	23.61	
S03M14	12:10	6/22/2020	99.90	21.22	4 " ID PVC
S03M15	9:00	6/22/2020	254.00	30.31	
S03M16	10:40	6/23/2020	147.40	25.71	
S03M17	12:00	6/23/2020	107.34	22.05	
S03M18	13:00	6/23/2020	107.21	22.54	
S03M19	10:00	6/23/2020	61.57	35.68	
S03M20	11:05	6/23/2020	100.52	2.71	
S03M21	9:50	6/22/2020	83.90	22.62	8.25" ID Steel
S03M22	17:15	6/22/2020	95.63	25.96	
S03M23	11:25	6/23/2020	100.32	16.39	
S03M24	11:15	6/23/2020	96.01	21.87	
S03M25	11:30	6/23/2020	90.71	16.03	
S03M26	11:39	6/23/2020	69.99	15.64	
S03M28	12:15	6/23/2020	98.78	16.03	
S03M29	11:48	6/23/2020	21.21	17.94	
S03M30	9:48	6/22/2020	---	---	Well is damaged
S03M31	12:10	6/23/2020	84.42	26.55	
S03M32	13:15	6/23/2020	93.90	20.87	
S03M33	13:30	6/23/2020	74.39	20.16	
S03M34	9:55	6/22/2020	99.30	23.77	5.25" ID steel
S03M35	13:34	6/22/2020	68.00	25.49	Located on edge of sink hole in lot
S03M36	13:22	6/22/2020	26.10	17.52	2" ID PVC
S03M37	13:26	6/22/2020	14.50	DRY	
S03M38	---	---	---	---	
S03M41	13:16	6/22/2020	91.10	23.30	2" ID PVC
S03M42	13:02	6/22/2020	73.48	24.10	2" ID PVC - Petroleum odor
S03M43	12:38	6/22/2020	97.10	28.83	
S03M44	8:58	6/24/2020	97.00	33.17	2" ID PVC
S03M45	8:50	6/23/2020	67.90	33.94	5.5" ID steel
S03M46	9:01	6/23/2020	107.70	18.91	5.5" ID steel
S03M47	9:10	6/23/2020	96.86	17.81	open borehole
S03M48	9:00	6/23/2020	99.00	22.66	
S03M49	9:15	6/23/2020	89.20	16.51	soft sediment
S03M50	9:10	6/23/2020	98.02	17.84	open borehole
S03M51	---	---	---	---	Inaccessible - Covered by trailer
S03M52	7:30	6/23/2020	83.80	26.51	
S03M53	15:55	6/22/2020	60.52	16.58	open borehole
S03M54	5:15	6/23/2020	92.81	16.71	open borehole
S03M55	8:00	6/23/2020	DRY	DRY	
S03M56	10:45	6/23/2020	100.29	26.24	open borehole
S03M57	11:45	6/23/2020	99.21	14.22	open borehole
S03M58	14:00	6/23/2020	89.05	14.52	
S03M60	---	---	---	---	Inaccessible - overgrown vegetation
S03M61D	16:48	6/22/2020	117.10	28.20	2" ID PVC
S03M61S	16:40	6/22/2020	35.10	26.51	2" ID PVC
S03M62D	16:56	6/22/2020	117.15	26.43	2" ID PVC
S03M62S	17:00	6/22/2020	43.28	26.44	2" ID PVC
S03M63D1	16:10	6/22/2020	241.11	20.23	
S03M63D2	16:32	6/22/2020	332.00	31.63	
S03M63D3	16:27	6/22/2020	270.00	25.85	
S03M64D1	13:05	6/23/2020	180.65	26.32	
S03M64D2	13:08	6/23/2020	216.82	30.70	
S03M64D3	13:20	6/23/2020	322.70	---	Obstruction at 101 ft TOR
S03M65D	9:50	6/23/2020	227.50	30.68	
S03M66D1	9:10	6/23/2020	187.90	18.72	2" ID PVC
S03M66D2	9:14	6/23/2020	207.90	19.19	2" ID PVC
S03M67D1	17:05	6/22/2020	162.80	26.68	
S03M67D2	17:05	6/22/2020	247.23	26.60	
S03M68D1	17:15	6/22/2020	181.62	26.61	
S03M68D2	17:18	6/22/2020	247.74	26.81	
S03M69D1	16:05	6/22/2020	193.11	37.18	
S03M69D2	16:10	6/22/2020	227.01	37.11	
S03M70	15:35	6/22/2020	349.93	19.35	
S03M71	16:35	6/22/2020	350.22	32.70	
S03M72	8:48	6/23/2020	349.05	26.38	
S03M73D1	10:30	6/23/2020	188.32	31.29	
S03M73D2	10:35	6/23/2020	350.01	31.44	
DD-1	15:40	6/22/2020	55.10	23.54	4" ID PVC
DD-7D	15:50	6/22/2020	132.40	21.53	4" ID Sch 80 PVC

Signature: 

Date: **7/20/2020**

APPENDIX A-2

Field Log Sheets

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	27.95
Sampling Device:	Bladder pump	**Well Depth:**	59.1
Date:	7-1-2020	**Feet of Water:**	31.14
Well I.D.:	503M01	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
10:55	27.95	6.65	0.871	16.92	11.25	9.65	124.5
11:00	27.95	6.75	0.864	17.55	9.45	9.18	117.7
11:05	27.95	6.84	0.820	14.16	9.83	8.12	114.9
11:10	27.95	6.90	0.802	13.48	9.38	7.05	110.9
11:15	27.96	6.96	0.804	13.70	8.71	6.13	105.4
11:20	27.96	6.98	0.805	13.70	8.36	6.10	103.4
11:25	27.96	6.97	0.797	13.48	8.17	6.01	104.4
11:30	27.96	6.98	0.797	13.50	8.05	5.81	103.9

Purge Start Time:	10:55	**Approx. Purge Rate:**	210 ml/min
Purge End Time:	11:30	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	7,350 mL

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 88°-90° Sunny

Comments:

Signature: [signature] **Date:** 7-1-2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	32.86
Sampling Device:	Bladder pump	**Well Depth:**	77.8
Date:	6/29/2020	**Feet of Water:**	44.94
Well I.D.:	503M[redacted]07	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
13:40	32.86	6.60	0.895	19.13	11.43	9.55	124.9
13:45	32.86	6.96	0.846	17.10	9.61	9.86	111.2
13:50	32.86	7.21	0.835	17.06	10.59	15.2	101.3
13:55	32.86	7.27	0.833	17.08	10.83	13.9	106.6
14:00	32.86	7.31	0.832	17.04	10.92	11.0	97.4
14:05	32.86	7.36	0.829	17.16	11.10	10.8	98.9
14:10	32.86	7.42	0.827	17.15	11.21	10.9	98.5
14:15	32.86	7.52	0.824	17.15	11.39	10.7	97.9

Purge Start Time: 13:40
Purge End Time: 14:15
Sampler: J. Engen

Approx. Purge Rate: 190 ml/min
Approx. Well Volume:
Total Volume Purged: +/- 6.7 l
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 89-90° Sunny

Comments:

Signature: [signature]

Date: 6/29/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	31.25
Sampling Device:	Bladder pump	**Well Depth:**	57
Date:	6-29-2020	**Feet of Water:**	25.75
Well I.D.:	503M03	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
7:05	31.25	6.68	0.648	20.14	19.31	16.25	-108.2
7:10	31.38	6.72	0.595	16.48	5.16	11.40	-106.3
7:15	31.40	6.77	0.586	16.03	3.70	9.68	-107.5
7:20	31.42	6.81	0.583	15.81	3.09	9.91	-107.9
7:25	31.45	6.85	0.579	15.62	2.40	9.97	-107.2
7:30	31.46	6.88	0.578	15.59	2.15	9.76	-106.7
7:35	31.47	6.90	0.578	15.54	2.00	9.80	-106.1
7:40	31.47	6.91	0.579	15.54	1.99	9.81	-106.3

Purge Start Time: 19:05
Purge End Time: 19:40
Sampler: [signature]

Approx. Purge Rate: 210 ml/min
Approx. Well Volume:
Total Volume Purged: 6.3 L
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 82-90° Sunny

Comments:

Signature: [signature] **Date:** 6/29/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	31.25
Sampling Device:	Bladder pump	**Well Depth:**	106
Date:	6-29-2020	**Feet of Water:**	74.75
Well I.D.:	303M07	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
15:20	31.25	7.16	0.633	23.26	14.78	8.78	-154.2
15:25	31.51	7.24	0.612	22.01	8.97	9.25	-162.2
15:30	31.65	7.25	0.605	21.84	6.18	10.38	-138.6
15:35	31.75	7.28	0.594	21.66	4.42	11.42	-117.5
15:40	31.87	7.29	0.589	21.54	5.20	12.38	-107.6
15:45	31.84	7.36	0.601	22.25	5.28	12.48	-93.4
15:50	31.84	7.38	0.595	21.74	5.32	14.44	-85.4
15:55	31.84	7.30	0.580	20.68	5.39	14.58	-88.8
16:00	31.84	7.31	0.587	20.94	5.40	14.61	-89.6

Purge Start Time:	15:20	**Approx. Purge Rate:**	200 ml/min
Purge End Time:	16:00	**Approx. Well Volume:**	
Sampler:	JRF	**Total Volume Purged:**	8.8 l

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 89-90° Sunny

Comments: Petroleum odor

Signature: [signature]

Date: 6-29-20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/30/20
Well I.D.: 503MW13

Tubing Diameter:
Depth to Groundwater: 31.50
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
8:40	31.01	7.68	0.151	17.20	10.94	15.2	158.6
8:45	31.34	7.03	0.248	16.35	5.11	5.34	176.8
8:50	31.66	7.08	0.327	12.55	3.31	6.27	147.7
8:55	31.98	6.90	0.392	16.53	2.55	4.79	63.8
9:00	32.25	6.87	0.415	16.58	2.16	3.76	-20.4
9:05	32.52	6.90	0.417	12.59	1.93	2.57	-58.1
9:10	32.77	6.93	0.411	16.55	1.73	3.70	-70.3
9:15	33.02	6.95	0.401	16.50	1.62	0.64	-77.1
9:20	33.22	6.97	0.394	16.61	1.55	2.67	-79.8
9:25	33.47	7.00	0.385	16.66	1.39	0.78	-84.0
9:30	Sample Time						

Purge Start Time: 8:40
Purge End Time: 9:25
Sampler: MRS

Approx. Purge Rate: 150 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Mid 70s

Comments:

Signature: MRS

Date: 6/30/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/24/20
Well I.D.: SB3M14

Tubing Diameter:
Depth to Groundwater: 21.30
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
13:05	21.35	7.17	0.353	18.66	1.67	2.98	39.4
13:10	21.34	6.76	0.349	18.32	0.61	3.56	-18.4
13:15	21.41	6.75	0.349	18.43	0.51	3.69	-40.0
13:20	21.30	6.72	0.346	18.13	0.48	3.42	-48.2
13:25	21.27	6.73	0.344	18.10	0.48	2.31	-53.6
13:30	21.30	6.73	0.344	18.03	0.46	2.76	-59.5
13:35	21.28	6.86	0.344	18.09	0.47	3.82	-63.9
13:40	21.30	6.93	0.344	18.18	0.47	3.06	-68.0
13:45	21.31	6.96	0.343	17.97	0.54	4.96	-69.9
13:50	21.31	6.81	0.339	17.81	0.63	5.63	-56.7
13:55	21.32	6.88	0.338	17.78	0.87	5.90	-49.4
14:00	21.31	6.88	0.339	17.81	1.27	6.57	-43.2
14:05	21.32	9.10	0.339	18.02	1.28	9.84	-28.8
14:10	Sample Time						

Purge Start Time: 13:05
Purge End Time: 14:05
Sampler: MRS

Approx. Purge Rate: 200 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Mid 80's

Comments:

Signature: MRS

Date: 6/24/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	5/8 M15 - 0630220
Project No.:	1041	**Depth to Groundwater:**	30.28
Sampling Device:	Bladder pump	**Well Depth:**	100'
Date:	Jun 30, 2020	**Feet of Water:**	69.72
Well I.D.:	503M15	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
10:55	30.28	7.63	0.202	18.93	12.86	23.2	106.2
11:00	30.32	7.06	0.153	18.91	9.11	1.65	115.6
11:05	31.56	7.12	0.174	18.61	7.54	1.58	119.2
11:10	31.68	7.43	0.770	18.57	6.74	2.67	104.9
11:15	31.63	7.55	0.646	18.58	5.76	3.47	-59.8
11:20	31.63	7.60	0.705	18.77	5.01	1.38	-94.9
11:25	31.63	7.64	0.829	19.23	4.15	1.61	-106.2
11:30	31.63	7.65	0.863	19.63	3.77	1.55	-109.6
11:35	31.63	7.66	0.882	20.05	3.44	2.11	-111.9
11:40	31.63	7.65	0.902	20.75	3.01	2.55	-114.2
11:45	31.63	7.65	0.916	21.51	2.98	2.35	-114.5

Purge Start Time:	10:55	**Approx. Purge Rate:**	210 ml/min
Purge End Time:	11:45	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	+/- 9.5 l

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 85-90° Sunny

Comments:

Signature: [signature]

Date: 6/30/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/23/20
Well I.D.: SO3MW6-062320

Tubing Diameter:
Depth to Groundwater: 25.42
Well Depth:
Feet of Water: ~~25.42~~
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (µS/cm)	Temperature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
16:55	25.42	7.37	0.432	18.54	4.08	26.2	22.7
17:00	26.00	6.51	0.418	17.62	3.07	33.1	37.6
17:05	26.30	6.43	0.418	17.74	4.95	28.9	48.4
17:10	26.53	6.58	0.422	18.18	6.01	29.2	50.7
17:15	26.68	6.68	0.422	18.31	5.28	34.8	49.2
17:20	26.79	6.72	0.421	18.45	5.97	32.9	54.8
17:25	26.81	6.69	0.419	18.23	6.46	40.2	60.9
17:30	26.86	6.67	0.417	18.11	6.80	36.9	66.9
17:35	26.94	6.73	0.417	17.85	6.90	38.8	70.1
17:40	26.97	6.60	0.417	17.91	6.97	35.2	70.9
17:45	Sample time						

Purge Start Time: 16:55
Purge End Time: 17:40
Sampler: BAM

Approx. Purge Rate: 200 ml/min
Approx. Well Volume: ^
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : hot 80's sunny

Comments: Note: first well sampled, equipment calibrated by rental co.

Signature: BMZ

Date: 6/23/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/24/20
Well I.D.: S03 MI7 - 062420

Tubing Diameter:
Depth to Groundwater: 22.23
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (mS/cm)	Temperature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
09:20	22.20	6.11	0.643	18.83	2.36	1.81	-22.0
09:25	22.26	6.02	0.643	18.45	2.40	2.97	-18.9
09:30	22.32	6.05	0.641	18.20	2.84	3.55	-16.5
09:35	22.35	6.03	0.633	17.99	2.10	6.01	-14.2
09:40	22.38	6.16	0.631	18.02	1.30	2.92	-25.5
09:45	22.50	6.28	0.628	18.01	0.94	2.63	-37.5
09:50	22.51	6.35	0.627	18.00	0.72	3.54	-44.6
09:55	22.52	6.38	0.626	17.96	0.68	4.67	-46.9
10:00	22.54	6.42	0.627	17.91	0.66	5.33	-50.9
10:05	Sample time						

Purge Start Time: 09:20
Purge End Time: 10:00
Sampler: BAM

Approx. Purge Rate: 200 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Warm 70s

Comments: Duplicate / MS / MSD samples Geochem / DNA

Signature: BM Gall **Date:** 6/24/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	22.65' 09:30
Sampling Device:	Bladder pump	**Well Depth:**	110
Date:	6-24-2020	**Feet of Water:**	87.35
Well I.D.:	503 MW-	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
9:50	22.70	6.69	.404	22.31	7.54	6.87	-79.9
9:55	22.74	6.68	.388	20.27	4.11	1.62	-86.9
10:00	22.79	6.76	.384	20.03	2.70	3.06	-95.6
10:05	22.81	6.91	.384	20.03	2.05	1.42	-102.3
10:10	22.82	6.87	.384	19.97	1.63	0.77	-102.6
10:15	22.84	6.92	.383	19.87	1.38	1.61	-99.2
10:20	22.86	6.94	.385	20.03	1.22	1.94	-98.4
10:25	22.87	6.99	.386	20.10	1.08	2.24	-104.1
10:30	22.89	7.00	.386	20.25	0.99	2.30	-108.4
10:35	22.96	7.02	.387	20.18	0.92	2.31	-112.5

Purge Start Time:	9:50	**Approx. Purge Rate:**	190 ml/min
Purge End Time:	10:35	**Approx. Well Volume:**	
Sampler:	J. Ingram	**Total Volume Purged:**	8.52 l

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 86° Sunny

Comments:

Signature: [signature] **Date:** 6/24/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	2.88
Sampling Device:	Bladder pump	**Well Depth:**	
Date:	6/24/20	**Feet of Water:**	
Well I.D.:	503M20	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
16:30	2.89	7.47	0.127	18.23	1.94	5.59	173.9
16:35	3.12	7.38	0.124	18.00	1.43	7.77	160.5
16:40	3.25	7.34	0.124	18.1	2.02	6.70	140.5
16:45	3.34	7.44	0.124	17.80	1.44	6.68	135.3
16:50	3.47	7.49	0.123	17.57	3.60	10.1	127.2
16:55	3.55	7.42	0.123	17.54	4.41	8.67	123.1
17:00	3.76	7.41	0.123	17.54	5.23	10.2	118.7
17:05	3.87	7.38	0.123	17.52	5.95	11.9	115.3
17:10	4.05	7.45	0.03	17.46	6.05	12.0	111.3
17:15	Sample Time						

Purge Start Time:	16:30	**Approx. Purge Rate:**	200 ml/min
Purge End Time:	17:10	**Approx. Well Volume:**	
Sampler:	MRS	**Total Volume Purged:**	

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Cloudy, Mid 80's

Comments:

Signature: MRS **Date:** 6/24/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	22.67
Sampling Device:	Bladder pump	**Well Depth:**	110
Date:	6-29-2020	**Feet of Water:**	82.33
Well I.D.:	503M21	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
17:15	22.67	6.81	0.463	19.80	17.01	7.17	68.8
17:20	22.90	6.99	0.436	17.74	8.49	7.90	80.0
17:25	22.90	7.04	0.434	17.70	8.03	7.98	85.1
17:30	22.90	7.13	0.435	17.85	8.47	7.75	90.4
17:35	22.90	7.15	0.433	17.68	9.01	8.03	96.6
17:40	22.90	7.19	0.431	17.59	9.50	8.34	104.5
17:45	22.91	7.22	0.429	17.35	9.75	8.21	109.3
17:50	22.91	7.22	0.429	17.29	9.80	8.36	111.5

Purge Start Time:	17:15	**Approx. Purge Rate:**	200 ml/min
Purge End Time:	17:50	**Approx. Well Volume:**	
Sampler:	J. Taylor	**Total Volume Purged:**	7 l

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny 88.90°

Comments:

Signature: J. Taylor **Date:** 6/29/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/25/20
Well I.D.: 503M22

Tubing Diameter:
Depth to Groundwater: 26.24
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
15:35	26.24	7.02	0.492	19.11	8.47	57.9	104.3
15:40	26.24	6.35	0.523	17.97	4.32	43.2	110.7
15:45	26.25	6.14	0.523	17.09	3.31	47.3	104.0
15:50	26.25	6.17	0.521	17.00	3.03	46.0	96.7
15:55	26.26	6.16	0.522	17.06	2.89	39.8	89.9
16:00	26.25	6.29	0.523	17.11	2.99	39.4	83.3
16:05	26.27	6.04	0.520	16.94	3.23	39.7	83.0
16:10	Sample Time						

Purge Start Time: 15:35
Purge End Time: 16:05
Sampler: MRS

Approx. Purge Rate: 250 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Cloudy, Low 80's

Comments:

Signature: MRS

Date: 6/25/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/25/20
Well I.D.: 503MW1

Tubing Diameter:
Depth to Groundwater: 29.04
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
12:00	29.25	6.58	0.590	18.87	0.97	61.6	-40.5
12:05	29.31	6.43	0.554	18.03	0.88	46.9	-46.3
12:10	29.21	6.48	0.536	18.84	0.81	58.4	-56.8
12:15	29.20	6.79	0.523	19.28	0.92	48.3	-72.2
12:20	29.20	6.86	0.509	19.48	1.05	45.0	-74.2
12:25	29.22	6.83	0.488	19.25	1.02	40.0	-69.8
12:30	29.23	6.83	0.472	18.87	1.01	29.5	-66.3
12:35	29.21	6.77	0.468	18.86	0.91	27.1	-64.0
12:40	29.22	6.78	0.467	18.82	0.85	29.7	-66.0
12:45	Sample time						
12:50	Duplicate						

Purge Start Time: 12:00
Purge End Time: 12:40
Sampler: MBS

Approx. Purge Rate: 100 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Low 80's

Comments: Duplicate collected/Sheen observed in purge water
Petroleum odor

Signature: MBS **Date:** 6/25/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	33.93
Sampling Device:	Bladder pump	**Well Depth:**	100'
Date:	6-30-2020	**Feet of Water:**	66.07
Well I.D.:	503MW4	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
13:05	33.93	6.93	0.891	19.61	14.30	14.38	74.5
13:10	33.95	6.93	0.867	18.18	5.83	134	80.1
13:15	33.96	6.98	0.863	18.09	5.00	124	80.7
13:20	33.96	7.02	0.849	17.76	4.51	123	82.6
13:25	33.96	7.11	0.830	17.67	4.55	101	82.4
13:30	33.97	7.15	0.822	17.62	4.60	82.3	81.4
13:35	33.97	7.16	0.790	17.10	4.91	65.2	82.5
13:40	33.97	7.18	0.783	17.26	5.40	63.5	81.7
13:45	33.97	7.20	0.776	17.26	5.61	58.6	78.4
13:50	33.97	7.24	0.752	17.16	5.64	56.4	77.6

Purge Start Time: 13:05
Purge End Time:
Sampler: S. Ferguson

Approx. Purge Rate: 200 ml/min
Approx. Well Volume:
Total Volume Purged: +/- 9.0 l
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 88-90° Sunny

Comments: Iron suspended in water

Signature:

Date: 6/30/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	34.74
Sampling Device:	Bladder pump	**Well Depth:**	100'
Date:	6-30-2020	**Feet of Water:**	65.26
Well I.D.:	503MW5	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
9:20	34.74	7.11	0.512	18.68	13.34	5.21	101.6
9:25	34.75	6.85	0.549	16.26	5.84	2.32	97.4
9:30	34.75	6.93	0.548	16.21	3.79	1.53	94.8
9:35	34.75	6.98	0.544	16.20	2.85	1.38	95.1
9:40	34.75	7.02	0.531	16.21	2.66	2.41	94.2
9:45	34.75	7.08	0.501	16.14	2.71	2.71	94.1
9:50	34.76	7.69	0.499	16.14	2.60	2.68	94.3

Purge Start Time:	09:20	**Approx. Purge Rate:**	210 ml/min
Purge End Time:	09:50	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	6.3 L

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny 84°-90°

Comments:

Signature: [signature]

Date: 6-30-2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6-30-2020
Well I.D.: 503MW6

Tubing Diameter:
Depth to Groundwater: 19.36
Well Depth: 100'
Feet of Water: 80.64
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
14:25	19.36	7.33	0.984	19.38	16.40	9.44	69.5
14:30	19.88	7.35	0.932	17.38	8.68	5.31	66.9
14:35	19.88	7.45	1.028	21.65	3.26	6.20	61.5
14:40	19.88	7.40	1.088	21.80	2.52	5.81	69.8
14:45	19.89	7.34	1.117	23.03	1.78	5.60	78.3
14:50	19.92	7.21	0.994	19.02	1.78	6.12	90.2
14:55	19.94	7.23	0.959	18.80	1.76	5.80	86.3
15:00	19.96	7.24	0.956	18.79	1.70	5.14	84.4

Purge Start Time: 14:25
Purge End Time: 15:00
Sampler: J. Ferguson

Approx. Purge Rate: 200 ml/min
Approx. Well Volume:
Total Volume Purged: +/- 7 L
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 88-90° Sun

Comments:

Signature:

Date: 6/30/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	22.55
Sampling Device:	Bladder pump	**Well Depth:**	100
Date:	6/25/2020	**Feet of Water:**	77.45
Well I.D.:	503MW8	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
13:10	22.55	7.01	0.719	21.44	7.83	17.1	112.5
13:15	22.95	6.90	0.719	20.53	6.96	15.3	119.5
13:20	22.98	6.92	0.719	20.50	4.87	15.7	122.1
13:25	23.07	6.95	0.719	20.43	4.43	15.4	124.2
13:30	23.14	6.97	0.717	20.31	4.23	14.7	125.6
13:35	23.28	6.97	0.717	20.39	4.07	11.9	126.6
13:40	23.52	6.99	0.717	20.39	4.02	9.86	127.0
13:45	23.64	7.00	0.717	20.30	3.99	9.86	127.3

Purge Start Time:	13:10	**Approx. Purge Rate:**	200 ml/min
Purge End Time:	13:45	**Approx. Well Volume:**	
Sampler:	T. Ferguson	**Total Volume Purged:**	+/- 7 L

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 85°-90° Sunny

Comments:

Signature: [signature] **Date:** 6/25/20

admin/forms/environmental/Low Flow Purging Form

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	16.42
Sampling Device:	Bladder pump	**Well Depth:**	100
Date:	6-25-2020	**Feet of Water:**	83.58
Well I.D.:	303MW9	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)	
15:46	16.42	6.43	0.829	18.32	12.70	34.3	-33.0	
15:51	16.65	6.48	0.821	17.95	9.06	33.2	-37.5	
15:56	16.60	6.62	0.830	17.73	8.41	43.7	-43.4	
16:01	16.60	6.57	0.798	16.71	8.12	40.0	-28.7	24 ml
16:06	16.62	6.60	0.799	16.70	8.10	42.7	-23.1	
16:11	16.64	6.70	0.792	16.54	8.06	38.8	-12.5	
16:16	16.68	6.77	0.785	16.49	8.04	35.8	-13.5	
16:21	16.72	6.80	0.781	16.99	8.08	39.9	-11.6	
16:26	16.74	6.84	0.779	16.59	8.06	43.2	-8.4	
16:31	16.76	6.86	0.774	16.49	8.10	43.1	5.2	

Purge Start Time:	15:46	**Approx. Purge Rate:**	710 ml/min
Purge End Time:	16.31	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	9.45 l

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 85°-90° Sunny

Comments:

Signature: [signature] **Date:** 6/25/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/25/20
Well I.D.: 503MSD

Tubing Diameter:
Depth to Groundwater: 18.20
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
8:25	18.13	7.22	1.212	17.19	9.56	12.8	-16.3
8:30	18.32	6.37	1.977	16.58	4.43	19.4	-24.5
8:35	18.41	6.30	1.476	16.48	2.05	9.31	-38.9
8:40	18.97	6.37	1.387	16.44	1.35	12.2	-47.4
8:45	18.94	6.96	1.256	16.42	1.22	24.0	-55.9
8:50	19.11	6.58	1.173	16.72	1.30	34.0	-61.9
8:55	19.26	6.73	1.126	16.54	1.64	31.2	-59.1
9:00	19.39	6.74	1.113	16.80	1.93	35.7	-52.1
9:05	19.48	6.81	1.105	16.89	2.14	41.2	-46.1
9:10	19.59	6.85	1.099	16.93	2.47	45.7	-39.0
9:15	19.70	6.89	1.091	16.98	2.69	48.9	-34.8
9:20	19.77	6.90	1.090	17.03	2.93	49.0	-31.2
9:25	19.85	6.92	1.092	17.01	3.08	51.9	-27.0
9:30	Sample Time						
	Dup - 9:35						
	MS - 9:40						
	MSD - 9:45						

Purge Start Time: 8:25
Purge End Time: 9:25
Sampler: MRS

Approx. Purge Rate: 250 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Low 70's

Comments: Collected Dup/MS/MSD, Small bubbles observed in flow cell

Signature: MRS **Date:** 6/25/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	16.70
Sampling Device:	Bladder pump	**Well Depth:**	100
Date:	6-25-2020	**Feet of Water:**	83.30
Well I.D.:	503MS1	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (mS/cm)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
17:55	16.70	7.26	.398	20.72	17.15	13.6	118.7
18:00	16.96	7.31	0.401	18.35	7.46	10.1	125.7
18:05	17.21	7.44	0.394	17.63	8.34	21.7	129.3
18:10	17.51	7.53	0.397	17.55	10.11	42.0	130.9
18:15	17.60	7.57	0.388	17.35	10.89	46.0	133.1
18:20	17.68	7.67	0.384	17.16	11.98	42.1	135.1
18:25	17.85	7.71	0.383	17.20	12.01	46.1	134.4
18:30	17.92	7.71	0.383	17.27	12.04	46.7	134.4

Purge Start Time:	17:55	**Approx. Purge Rate:**	270 ml/min
Purge End Time:	18:30	**Approx. Well Volume:**	
Sampler:	J. [illegible]	**Total Volume Purged:**	8.57 L

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 85° Sunny / Muggy Storms

Comments:

Signature: [signature]

Date: 6/25/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	26.59
Sampling Device:	Bladder pump	**Well Depth:**	
Date:	6/25/20	**Feet of Water:**	
Well I.D.:	503MS2	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
17:35	26.51	7.25	0.644	18.54	3.00	24.9	120.3
17:40	26.62	7.08	0.652	17.39	1.68	16.5	139.3
17:45	26.71	6.94	0.645	17.17	0.95	13.0	143.8
17:50	26.76	7.01	0.648	17.20	0.93	12.3	136.9
17:55	26.78	7.02	0.642	17.00	1.06	9.63	135.8
18:00	26.81	7.04	0.642	17.07	1.45	8.32	134.0
18:05	26.86	7.01	0.636	16.74	1.62	8.79	134.3
18:10	Sample Time						

Purge Start Time:	17:35	**Approx. Purge Rate:**	100 ml/min
Purge End Time:	18:05	**Approx. Well Volume:**	
Sampler:	MRS	**Total Volume Purged:**	

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Low 80's

Comments:

Signature: MRS **Date:** 6/25/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	16.91
Sampling Device:	Bladder pump	**Well Depth:**	100
Date:	6/24/2020	**Feet of Water:**	83.09
Well I.D.:	503 MS4	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
13:55	16.91	6.91	.599	23.08	19.58	8.96	-136.8
14:00	16.98	6.84	.682	20.50	7.15	6.07	-143.2
14:05	16.98	7.01	.672	21.90	3.10	5.98	-161.7
14:10	16.98	7.15	.690	22.92	1.91	5.14	-178.8
14:15	16.98	7.18	.695	23.18	1.21	5.26	-185.0
14:20	16.98	7.18	.694	23.14	1.10	5.24	-184.6
14:25	16.99	7.20	.692	23.05	0.87	5.31	-186.7
14:30	16.98	7.21	.693	23.24	0.75	5.41	-189.5
14:35	16.98	7.22	.694	23.25	0.65	5.42	-189.8

Purge Start Time:	13:53	**Approx. Purge Rate:**	200 ml/min
Purge End Time:	14:35	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	1-2 l

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny 80°-90°

Comments:

Signature: [signature] **Date:** 6/24/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	14.22
Sampling Device:	Bladder pump	**Well Depth:**	99.21
Date:	6-23-2020	**Feet of Water:**	84.99
Well I.D.:	503 MW57	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (mS/cm)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
17:05	14:22	6.85	.402	21.82	19.02	3.14	-58.6
17:10	14:25	6.78	.395	18.99	4.85	3.02	-78
17:15	14.25	7.01	.392	21.05	2.18	1.59	-91.9
17:20	14.25	7.06	.393	20.71	1.60	0.74	-95.2
17:25	14.25	6.97	.392	20.30	1.27	1.25	-88.2
17:30	14.26	7.02	.391	20.33	1.05	1.30	-90.7
17:35	14.26	7.06	.390	20.11	0.95	1.50	-89.5
17:40	14.26	7.09	.389	19.95	0.91	3.06	-87.9
17:45	14.26	7.09	.388	19.80	0.88	3.05	-84.8

Purge Start Time:	17:05	**Approx. Purge Rate:**	200 ml/min
Purge End Time:	17:45	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	8 Gal

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny 88-90

Comments:

Signature: [signature] **Date:** 6/23/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/30/20
Well I.D.: SB3MW15

Tubing Diameter:
Depth to Groundwater: 27.63
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)

Purge Start Time:
Purge End Time:
Sampler: MRS

Approx. Purge Rate: ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, High 80's

Comments: Could not sample due to lack of water - 18:50

Signature: MRS

Date: 6/30/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/29/20
Well I.D.: 503MW23

Tubing Diameter:
Depth to Groundwater: 27.26
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
17:50	28.53	7.99	0.501	18.46	5.50	9.23	88.2
17:55	29.49	6.80	0.472	16.20	7.01	7.13	109.7
18:00	30.19	6.75	0.467	15.82	7.43	3.77	107.2
18:05	30.99	6.76	0.467	15.93	7.47	3.97	101.0
18:10	32.09	6.90	0.466	15.96	7.49	3.92	97.9
18:15	32.43	6.92	0.466	16.00	7.54	3.30	95.0
18:20	32.90	7.00	0.469	16.08	7.48	3.67	77.9
18:25	33.29	7.07	0.466	16.04	7.35	1.50	73.9
18:30	Sample Time.						

Purge Start Time: 17:50
Purge End Time: 18:25
Sampler: MRS

Approx. Purge Rate: 150 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, High 80's

Comments:

Signature: MRS

Date: 6/29/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/26/20
Well I.D.: 503M(301)

Tubing Diameter:
Depth to Groundwater: 20.97
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
10:25	17.96	12.96	5.177	21.23	2.62	9.17	60.0
10:30	19.64	12.14	4.803	19.67	4.16	10.7	90.1
10:35	23.22	12.02	4.560	17.44	3.09	21.2	93.9
10:40	24.53	12.02	4.566	17.44	2.58	17.6	92.8
10:45	26.46	12.04	4.549	17.41	2.27	15.8	89.0
10:50	28.46	12.06	4.541	17.34	2.12	11.5	85.5
10:55	30.59	12.06	4.537	17.40	1.94	9.79	82.4
11:00	32.14	12.07	4.531	17.24	1.84	7.06	78.7
11:05	34.51	12.07	4.517	17.17	1.69	7.00	74.4
11:10	Sample Time						

Purge Start Time: 10:25
Purge End Time: 11:05
Sampler: MRS

Approx. Purge Rate: 250 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, High 90's

Comments: Light sheen observed in purge water, no petroleum odor

Signature: MM JS **Date:** 6/26/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/26/20
Well I.D.: 503MG302

Tubing Diameter:
Depth to Groundwater: 28.48
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
8:25	30.14	11.97	2.047	18.63	8.69	12.9	155.2
8:30	31.25	11.51	2.143	17.57	3.71	4.58	165.1
8:35	32.42	11.46	2.183	17.39	3.49	2.05	167.4
8:40	33.83	11.49	2.142	17.24	2.48	4.94	148.2
8:45	34.93	11.54	2.126	17.22	1.67	3.05	140.5
8:50	36.08	11.59	2.120	17.29	1.46	3.62	133.7
8:55	37.20	11.63	2.119	17.36	1.30	3.96	127.5
9:00	38.28	11.68	2.119	17.45	1.23	2.45	121.6
9:05	Sample Time						

Purge Start Time: 8:25
Purge End Time: 9:00
Sampler: MRS

Approx. Purge Rate: 150 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, High 60's

Comments:

Signature: MRS **Date:** 6/26/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6-25-2020
Well I.D.: 503M63 D3

Tubing Diameter:
Depth to Groundwater: 25.68' STATIC / 24.77
Well Depth: 270
Feet of Water: 244.32
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (mS/cm)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
09:57	24.77	10.57	.737	19.44	8.50	32.9	100.1
10:02	27.20	11.15	1.168	18.18	7.55	32.4	72.7
10:07	28.70	11.32	1,374	17.90	7.01	30.2	58.4
10:12	29.35	11.44	1,412	17.93	6.16	29.8	49.8
10:17	30.15	11.48	1,428	17.94	5.54	31.0	47.3
10:22	31.35	11.52	1,431	17.75	4.99	29.6	45.6
10:27	32.47	11.56	1,420	17.90	4.50	29.6	42.3
10:32	33.46	11.58	1,413	17.95	4.14	29.9	40.5
10:37	33.46	11.55	1,412	18.00	3.99	29.8	39.2

Purge Start Time: 09:57
Purge End Time: 10:37
Sampler: J. Ferguson

Approx. Purge Rate: 200 ml/min
Approx. Well Volume:
Total Volume Purged: 8.0 l
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 78° - 90° SUNNY

Comments: Following installation of tubing/pump STATIC @ 16.15' (NOT STABLE)

Signature: RT **Date:** 6-25-2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	22.51
Sampling Device:	Bladder pump	**Well Depth:**	185
Date:	6-24-2020	**Feet of Water:**	162.49
Well I.D.:	503 MW4D1	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (mS/cm)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
16:30	22.51	11.83	4.995	21.42	11.98	11.7	31.6
16:35	25.90	12.04	5.063	19.48	8.29	18.7	-1.3
16:40	27.91	12.11	5.020	18.84	6.15	10.6	-21.7
16:45	30.12	12.14	5.053	19.20	4.55	8.43	-31.0
16:50	31.14	12.14	5.129	19.97	3.40	8.74	-36.0
16:55	32.77	12.15	5.130	19.85	2.70	7.45	-37.1
17:00	33.77	12.15	5.125	19.83	2.36	8.16	-37.3
17:05	34.98	12.15	5.114	19.83	2.12	7.59	-37.6
17:10	35.21	12.15	5.125	19.84	1.90	7.61	-37.8

Purge Start Time:	16:30	**Approx. Purge Rate:**	210 ml/min
Purge End Time:	17:10	**Approx. Well Volume:**	8.5 l
Sampler:	J. Hughes	**Total Volume Purged:**	

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny 88-90

Comments:

Signature:

Date: 6-24-2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/26/20
Well I.D.: 503MCH02

Tubing Diameter:
Depth to Groundwater: 29.53
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
12:10	29.22	11.65	2.282	20.00	2.20	10.9	130.4
12:15	31.31	11.35	2.068	18.78	1.61	14.2	138.9
12:20	33.84	11.38	2.018	18.32	1.07	10.4	132.1
12:25	35.03	11.32	2.013	18.58	0.88	8.00	125.8
12:30	36.90	11.42	2.013	18.48	1.14	9.04	115.5
12:35	38.57	11.42	2.023	18.74	0.93	9.03	105.0
12:40	40.96	11.48	2.025	18.79	0.79	10.3	96.4
12:45	41.68	11.50	2.019	18.66	0.69	7.42	88.6
12:50	43.12	11.56	2016	18.51	0.65	9.57	83.6
12:55	Sample Time						

Purge Start Time: 12:10
Purge End Time: 12:50
Sampler: MRS

Approx. Purge Rate: 200 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, High 70's

Comments:

Signature: MRS **Date:** 6/26/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	23.55
Sampling Device:	Bladder pump	**Well Depth:**	230
Date:	6/29/2020	**Feet of Water:**	206.45
Well I.D.:	303M1650	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
12:50	23.55	8.48	0.570	20.53	12.70	4.14	27.6
12:55	23.64	9.11	0.506	17.57	4.05	12.1	-104.4
13:00	23.71	9.19	0.494	16.95	2.70	7.02	-119.7
13:05	23.84	9.25	0.493	16.99	2.21	7.37	-125.6
13:10	23.97	9.31	0.492	17.09	1.83	7.41	-132.3
13:15	24.15	9.40	0.498	17.57	1.53	7.51	-140.4
13:20	24.31	9.43	0.497	17.55	1.42	8.14	-142.4
13:25	24.47	9.44	0.498	17.65	1.32	7.61	-144.6
13:30	24.64	9.46	0.500	17.80	1.29	7.88	-145.8

Purge Start Time:	12:50	**Approx. Purge Rate:**	200 ml/min
Purge End Time:	13:30	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	8.8 L

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny 85-90°

Comments:

Signature: [signature] **Date:** 6/29/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/30/20
Well I.D.: 503MW201

Tubing Diameter:
Depth to Groundwater: 15.70
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
10:40	17.59	11.09	1.416	19.88	2.93	21.3	70.9
10:45	18.99	11.06	1.390	18.84	3.26	30.3	85.9
10:50	20.01	11.07	1.392	18.64	2.58	17.0	97.9
10:55		11.09	1.400	18.75	2.12	12.2	107.0
11:00		11.12	1.394	18.60	1.88	6.62	107.2
11:05		11.13	1.382	18.55	1.85	8.68	85.8
11:10		11.10	1.378	18.15	1.77	8.44	89.4
11:15	Sample Time						

Purge Start Time: 10:40
Purge End Time: 11:10
Sampler: MRS

Approx. Purge Rate: 150 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, High 70s

Comments: Water level meter not working

Signature: MRS **Date:** 6/30/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/30/20
Well I.D.: SB3MW-12

Tubing Diameter:
Depth to Groundwater: 15.41
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
12:20	17.57	11.30	1.627	21.05	3.19	9.76	50.8
12:25	19.11	11.12	1.528	19.19	3.59	19.1	54.7
12:30	20.24	11.12	1.500	18.61	2.69	11.6	47.9
12:35	21.83	11.13	1.512	19.04	2.22	8.51	41.4
12:40	23.46	11.16	1.514	19.16	1.93	7.67	33.4
12:45	24.79	11.18	1.515	19.18	1.89	10.7	28.5
12:50	26.18	11.19	1.499	18.74	1.83	9.46	85.1
12:55	27.60	11.19	1.510	19.16	1.73	7.60	21.9
13:00	28.84	11.20	1.512	19.17	1.65	8.52	18.7
13:05	Sample Time						

Purge Start Time: 12:20
Purge End Time: 13:00
Sampler: MRS

Approx. Purge Rate: 150 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Low 80's

Comments:

Signature:

Date: 6/30/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 7/1/20
Well I.D.: 503MW701

Tubing Diameter:
Depth to Groundwater: 26.98
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
10:35	27.53	7.85	0.518	20.14	4.17	4.91	111.0
10:40	27.60	7.77	0.503	18.33	4.48	5.15	109.1
10:45	28.04	7.33	0.493	17.27	2.38	6.31	122.2
10:50	28.94	7.25	0.494	17.53	1.69	4.50	124.3
10:55	28.94	7.18	0.500	18.06	1.37	4.44	117.1
11:00	28.96	7.18	0.497	17.84	1.79	8.04	113.5
11:05	28.96	7.18	0.492	17.34	1.54	3.75	109.4
11:10	28.98	7.11	0.486	16.94	1.76	4.68	105.0
11:15	28.99	7.09	0.486	17.33	1.60	4.81	97.6
11:20	Sample Time						

Purge Start Time: 10:35
Purge End Time: 11:15
Sampler: MRS

Approx. Purge Rate: 100 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Low 80's

Comments:

Signature: [signature]

Date: 7/1/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 7/1/20
Well I.D.: 503MW702

Tubing Diameter:
Depth to Groundwater: 25.01
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
12:00	27.57	7.66	0.467	21.06	0.97	3.72	65.7
12:05	28.55	7.20	0.423	19.42	3.85	5.26	56.6
12:10	29.96	7.09	0.411	17.44	1.33	4.97	-10.7
12:15	30.49	7.00	0.412	17.24	1.06	8.58	-38.6
12:20	31.09	7.05	0.413	17.37	0.88	1.95	-35.3
12:25	31.57	7.02	0.408	16.69	0.88	6.73	-21.6
12:30	31.86	6.93	0.404	16.40	0.87	1.26	-9.4
12:35	32.15	6.89	0.404	16.37	0.85	4.62	-1.2
12:40	32.33	6.90	0.404	16.44	0.86	2.80	2.1
12:45	Sample Time.						

Purge Start Time: 12:00
Purge End Time: 12:40
Sampler: MRS

Approx. Purge Rate: 175 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Mid 80s

Comments:

Signature: MRS

Date: 7/1/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/30/20
Well I.D.: 503MG801

Tubing Diameter:
Depth to Groundwater: 27.60
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
15:10	27.61	8.43	0.567	19.09	4.75	2.80	65.4
15:15	27.59	7.66	0.581	16.39	3.24	5.65	71.8
15:20	27.59	7.33	0.596	16.50	2.13	5.30	67.3
15:25	27.61	7.18	0.609	16.35	1.74	7.98	64.4
15:30	27.60	7.09	0.616	16.37	1.55	5.69	62.7
15:35	27.59	7.03	0.617	16.32	1.46	8.43	61.7
15:40	27.61	6.99	0.615	16.06	1.40	6.25	60.4
15:45	Sample Time						

Purge Start Time: 15:00
Purge End Time: 15:40
Sampler: MRS

Approx. Purge Rate: 100 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny Mid 80's

Comments:

Signature: MRS **Date:** 6/30/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/30/20
Well I.D.: 553468D2

Tubing Diameter:
Depth to Groundwater: 24.46
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
16:50	26.64	7.87	0.767	19.18	2.81	15.7	91.3
16:55	27.89	7.30	0.724	16.34	3.03	11.4	86.3
17:00	29.16	7.10	0.698	16.09	1.69	14.4	52.1
17:05	29.94	7.05	0.687	15.95	1.50	8.24	19.8
17:10	30.72	7.02	0.684	15.84	1.17	10.7	-7.3
17:15	31.56	7.00	0.682	15.87	1.07	9.88	-26.0
17:20	32.15	6.99	0.681	15.84	1.08	6.07	-35.3
17:25	32.65	6.98	0.679	15.73	0.97	4.26	-38.5
17:30	33.27	6.96	0.677	15.67	1.03	8.59	-41.6
17:35	33.69	6.96	0.675	15.56	1.01	7.40	-44.0
17:40	34.03	6.95	0.674	15.69	1.08	4.02	-45.0
17:45	Sample Time						

Purge Start Time: 16:30
Purge End Time: 17:40
Sampler: MRS

Approx. Purge Rate: 150 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, High 80's

Comments:

Signature: MRS

Date: 6/30/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	38.34
Sampling Device:	Bladder pump	**Well Depth:**	195
Date:	June 30, 2020	**Feet of Water:**	156.66
Well I.D.:	503MW6AD1	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
18:10	38.34	7.21	0.597	19.03	12.45	4.32	42.1
18:15	39.07	7.20	0.542	15.99	9.45	3.15	-28.0
18:20	39.02	7.25	0.552	15.84	6.30	4.14	-60.4
18:25	39.03	7.26	0.557	16.18	5.11	3.86	-65.5
18:30	39.03	7.22	0.550	15.66	4.58	3.41	-58.9
18:35	39.04	7.22	0.548	15.42	4.10	2.81	-52.6
18:40	39.04	7.23	0.545	15.36	3.89	2.74	-45.9
18:45	39.04	7.23	0.546	15.36	3.80	2.80	-46.1

Purge Start Time:	18:10	**Approx. Purge Rate:**	195 ml/min
Purge End Time:	18:45	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	6.825 l

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny 85-90°

Comments:

Signature: [signature] **Date:** 6/30/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	37.48
Sampling Device:	Bladder pump	**Well Depth:**	230'
Date:	June 30, 2020	**Feet of Water:**	192.52
Well I.D.:	503M69D2	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
16:30	37.48	7.39	0.694	21.62	16.38	1.89	55.6
16:35	39.03	7.15	0.637	18.55	11.54	3.63	55.8
16:40	39.11	7.19	0.599	15.97	6.26	2.55	-59.1
16:45	39.19	7.22	0.592	15.54	3.95	3.21	-74.2
16:50	39.21	7.25	0.592	15.52	2.89	3.31	-79.0
16:55	39.22	7.24	0.589	15.50	2.26	3.16	-78.4
17:00	39.24	7.26	0.586	15.47	1.86	3.01	-77.5
17:05	39.27	7.27	0.584	15.36	1.67	2.61	-77.0

Purge Start Time:	16:30	**Approx. Purge Rate:**	210 ml/min
Purge End Time:	17:05	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	7.35 l

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny 85°-90°

Comments:

Signature: [signature]

Date: 6/30/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/29/20
Well I.D.: SSBMW10

Tubing Diameter:
Depth to Groundwater: 24.26
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
16:05	22.74	7.99	0.613	19.70	5.14	7.96	147.0
16:10	25.65	7.98	0.579	18.48	2.62	6.37	140.2
16:15	27.57	8.22	0.579	18.69	1.33	6.36	120.7
16:20	29.52	8.39	0.605	18.74	1.02	8.98	105.9
16:25	30.94	8.06	0.643	18.50	0.91	9.69	98.3
16:30	32.40	6.89	0.747	18.16	0.90	7.40	-4.0
16:35	33.91	6.70	0.775	18.26	1.09	7.44	-57.0
16:40	34.92	6.67	0.765	17.83	1.43	7.86	-63.0
16:45	35.99	6.66	0.754	18.03	1.06	7.97	-66.1
16:50	37.15	6.70	0.791	18.19	0.91	6.03	-70.5
16:55	Sample Time						

Purge Start Time: 16:05
Purge End Time: 16:50
Sampler: MRS

Approx. Purge Rate: 150 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, High 80's

Comments:

Signature: MRS

Date: 6/29/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/29/20
Well I.D.: 503MW1

Tubing Diameter:
Depth to Groundwater: 34.65
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
14:05	32.86	9.48	0.374	25.54	4.65	0.78	13.0
14:10	34.17	7.83	0.306	20.78	4.28	0.84	68.1
14:15	35.09	8.95	0.355	21.69	3.25	1.98	31.6
14:20	36.12	8.96	0.341	21.80	2.45	4.49	-11.9
14:25	37.32	9.15	0.297	21.80	1.83	5.01	-31.8
14:30	38.31	9.16	0.269	21.47	1.79	5.31	-48.3
14:35	38.90	8.61	0.242	21.12	1.65	5.94	-38.1
14:40	39.75	8.58	0.228	20.94	1.55	5.82	-37.0
14:45	41.23	8.59	0.230	21.07	1.32	6.76	-37.2
14:50	Sample Time						

Purge Start Time: 14:05
Purge End Time: 14:45
Sampler: MKS

Approx. Purge Rate: 100 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Mid 80's

Comments:

Signature: MKS

Date: 6/29/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 6/29/20
Well I.D.: 503MW2

Tubing Diameter:
Depth to Groundwater: 26.75
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
12:10	26.27	11.97	3.020	24.23	10.32	22.3	97.9
12:15	28.13	12.29	3.172	21.35	3.05	12.9	57.6
12:20	28.64	12.14	3.108	20.28	1.73	7.52	38.3
12:25	29.55	12.02	3.057	20.20	1.12	10.1	50.4
12:30	30.35	12.00	3.101	21.30	2.92	19.1	25.8
12:35	31.11	12.18	3.113	21.95	0.88	2.10	-0.8
12:40	31.98	12.07	3.079	21.73	0.89	0.83	-18.2
12:45	32.66	12.07	3.039	21.32	0.92	0.22	-34.9
12:50	33.23	12.00	3.067	22.09	0.87	0.35	-40.0
12:55	Sample Time						

Purge Start Time: 12:10
Purge End Time: 12:50
Sampler: MAS

Approx. Purge Rate: 100 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Low 80's

Comments: Tubing could not be inserted last ~2ft. Small bubbles in flow cell

Signature: MS

Date: 6/29/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	31.71
Sampling Device:	Bladder pump	**Well Depth:**	189
Date:	6-25-2020	**Feet of Water:**	157.29
Well I.D.:	503M73D1	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
11:20	31.71	7.72	0.266	24.41	22.21	9.83	25.1
11:25	31.71	7.52	0.203	24.52	11.90	9.94	37.8
11:30	31.71	6.48	0.093	17.95	8.65	6.10	73.0
11:35	31.72	6.54	0.122	17.48	5.64	8.43	-22.0
11:40	31.75	7.04	0.227	17.66	3.56	8.32	-56.9
11:45	31.78	7.14	0.282	17.63	3.20	8.47	-63.0
11:50	31.84	7.10	0.459	17.74	2.61	8.51	-69.9
11:55	31.88	7.08	0.486	17.83	2.41	8.53	-68.2
12:00	31.91	7.10	0.491	17.94	2.27	8.57	-65.0

Purge Start Time:	11:20	**Approx. Purge Rate:**	210 ml/min
Purge End Time:	12:00	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	8.4 l

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 85°-90° Sunny

Comments:

Signature: [signature] **Date:** 6-25-2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site:	NSA Mechanicsburg	**Tubing Diameter:**	
Project No.:	1041	**Depth to Groundwater:**	31.68 / Post pump 31.68 (258)
Sampling Device:	Bladder pump	**Well Depth:**	349
Date:	6/25/2020	**Feet of Water:**	317.37
Well I.D.:	303MW32D	**Volume of Water in Well:**	

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
09:40	25.80	7.29	0.665	24.19	6.93		-55.4
09:45	27.30	7.30	0.669	24.44	6.21		-47.8
09:50		Pump Problems					
09:55			↓	Removed Pump to assembled			
10:00	31.46	7.52	0.504	24.59	7.83	9.58	11.0
10:05	31.95	7.52	0.456	23.48	8.20	9.62	14.8
10:10	32.40	7.52	0.436	22.96	8.70	9.79	17.4
10:15	32.90	7.45	0.366	20.42	10.66	11.1	19.9
10:20	33.23	7.50	0.365	19.61	11.54	10.5	7.4
10:25	33.65	7.51	0.367	19.39	11.80	10.3	0.9
10:30	33.82	7.51	0.371	19.34	11.80	10.8	-8.3
10:35	33.98	7.50	0.373	19.29	11.64	10.7	-24.3

Purge Start Time:	09:40	**Approx. Purge Rate:**	220 ml/min
Purge End Time:	10:35	**Approx. Well Volume:**	
Sampler:	J. Ferguson	**Total Volume Purged:**	9.9L

Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : 80-90 Sunny Clear

Comments:

Signature: [signature] **Date:** 6/26/2020

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 7/1/20
Well I.D.: OB-7

Tubing Diameter:
Depth to Groundwater: 25.49
Well Depth:
Feet of Water:
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
8:50	25.70	7.93	0.231	16.91	7.03	13.9	137.9
8:55	25.70	6.95	0.195	14.94	3.22	10.0	176.7
9:00	25.77	6.93	0.197	14.68	2.99	9.71	170.2
9:05	25.82	6.91	0.231	14.85	3.07	8.02	164.1
9:10	25.84	6.94	0.257	14.92	3.28	8.13	155.1
9:15	25.84	6.97	0.269	14.73	3.32	6.92	148.1
9:20	25.84	6.94	0.257	14.39	3.38	6.68	146.0
9:25	Sample Time						

Purge Start Time: 8:50
Purge End Time: 9:20
Sampler: TRF/MRS

Approx. Purge Rate: 250 ml/min
Approx. Well Volume:
Total Volume Purged:
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : Sunny, Low 70's

Comments:

Signature:

Date: 7/1/20

AMS RHEA JV

WELL PURGING RECORD
LOW-FLOW SAMPLING

Site: NSA Mechanicsburg
Project No.: 1041
Sampling Device: Bladder pump
Date: 7-1-2021
Well I.D.: DD-7D

Tubing Diameter:
Depth to Groundwater: 22.72
Well Depth: 130'
Feet of Water: 107.28
Volume of Water in Well:

Time	Depth to Water (ft TOR)	pH (s.u.)	Specific Conductance (/)	Temper-ature (C)	Dissolved Oxygen (ppm)	Turbidity (NTU)	Redox (mV)
12:05	22.72	8.77	0.381	23.09	14.90	12.14	75.3
12:10	23.24	7.11	0.461	17.06	8.02	8.21	89.1
12:15	23.32	7.14	0.481	16.64	5.10	8.10	88.9
12:20	23.62	7.05	0.477	15.83	5.05	7.61	95.5
12:25	23.72	7.04	0.473	15.53	5.20	6.05	98.9
12:30	23.76	7.08	0.475	15.32	5.28	5.88	101.4
12:35	23.77	7.07	0.475	15.24	5.31	5.67	103.2
12:40	23.78	7.07	0.476	15.20	5.30	5.69	104.1

Purge Start Time: 12:05
Purge End Time: 12:40
Sampler: J. Ferguson

Approx. Purge Rate: 200 ml/min
Approx. Well Volume:
Total Volume Purged: 7,000ml
Well Volume (gal.) (2" well)= (ft of water)(0.163)

Weather : SUNNY 88°-90°

Comments:

Signature:

Date: 7/1/2021

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503MO1-070120
PROJECT NO.	1041	WELL NO.	503 MO1
SAMPLE DATE	July 1, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	11:30	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	27.96		

FIELD MEASUREMENTS		
pH	Standard Units	6.98
Specific Conductance	mS/cm	0.797
Water Temperature	°C	13.50
Dissolved Oxygen	ppm	8.69
Redox Potential	mV	103.9
Turbidity	NTU	5.81

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 210 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCl	N
PCBs	250 ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA	Courier - SGS DATE 7-1-2020
WEATHER	88°-90° Sunny		
COMMENTS			

Signature: _____ Date: 7/1/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M02 - 062926
PROJECT NO.	1041	WELL NO.	503M02
SAMPLE DATE	6/29/2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	14:15	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	32.86		

FIELD MEASUREMENTS		
pH	Standard Units	7.52
Specific Conductance	mS/cm	0.824
Water Temperature	°C	17.15
Dissolved Oxygen	ppm	11.38
Redox Potential	mV	97.4
Turbidity	NTU	10.2

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 190 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCL	N
PCBs	250 ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA SGS Courier	DATE 6/29/20
WEATHER	85-90° Sunny		
COMMENTS			

Signature: _____ Date: 6/29/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	303M03-062920
PROJECT NO.	1041	WELL NO.	303M03
SAMPLE DATE	Jun 29, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	07:40 (19:40)	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	31.47		

FIELD MEASUREMENTS		
pH	Standard Units	6.91
Specific Conductance	mS/cm	0.579
Water Temperature	°C	15.54
Dissolved Oxygen	ppm	1.99
Redox Potential	mV	-106.3
Turbidity	NTU	9.81

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 210 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCL	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) HNO3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA	SGS Courier
DATE	6/30/2020		
WEATHER	85-90° Sunny		
COMMENTS			

Signature: J. Ferguson

Date: 6/29/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	303M07-062920
PROJECT NO.	1041	WELL NO.	303M07
SAMPLE DATE	June 29, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	16:00	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	31.84		

FIELD MEASUREMENTS		
pH	Standard Units	7.31
Specific Conductance	mS/cm	0.382
Water Temperature	°C	20.94
Dissolved Oxygen	ppm	5.40
Redox Potential	mV	-89.6
Turbidity	NTU	14.61

WATER APPEARANCE OR ODORS: clear

SAMPLING FLOW RATE: 220 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCl	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	565	DELIVERED VIA Courier - 565	DATE 6/29/2020
WEATHER	89°-90° Sunny		
COMMENTS			

Signature: _____ Date: 6/29/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M13-063020
PROJECT NO.	1041	WELL NO.	503M13
SAMPLE DATE	6/30/20	SAMPLED BY	MRS
SAMPLE TIME	9:30	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	33.47		

FIELD MEASUREMENTS		
pH	Standard Units	7.00
Specific Conductance	mS/cm	0.385
Water Temperature	°C	16.66
Dissolved Oxygen	ppm	1.39
Redox Potential	mV	-84.0
Turbidity	NTU	0.78

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 150 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 6/30/20
WEATHER	Sunny, Mid 70's		
COMMENTS			

Signature: MRS

Date: 6/30/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB3M14-062420
PROJECT NO.	1041	WELL NO.	SB3M14
SAMPLE DATE	6/24/20	SAMPLED BY	MRS
SAMPLE TIME	14:10	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	~~22~~ 21.32		

FIELD MEASUREMENTS		
pH	Standard Units	7.10
Specific Conductance	mS/cm	0.334
Water Temperature	°C	18.02
Dissolved Oxygen	ppm	1.68
Redox Potential	mV	-28.8
Turbidity	NTU	9.84

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 6/24/20
WEATHER	Sunny, Mid 80's		
COMMENTS			

Signature: MRS

Date: 6/24/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	303M15-063020
PROJECT NO.	1041	WELL NO.	303M15
SAMPLE DATE	June 30, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	11:45	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	31.63		

FIELD MEASUREMENTS		
pH	Standard Units	7.65
Specific Conductance	mS/cm	0.916
Water Temperature	°C	21.51
Dissolved Oxygen	ppm	2.88
Redox Potential	mV	-114.5
Turbidity	NTU	2.35

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 216 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCl	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA SGS Courier	DATE 6/30/20
WEATHER	85°-90° Sunny		
COMMENTS			

Signature: _____ Date: 6/30/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SO3M16-062320
PROJECT NO.	1041	WELL NO.	SO3M16
SAMPLE DATE	6/23/20	SAMPLED BY	BAM
SAMPLE TIME	1745	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	26.97		

FIELD MEASUREMENTS		
pH	Standard Units	6.60
Specific Conductance	mS/cm	0.417
Water Temperature	°C	17.91
Dissolved Oxygen	ppm	6.97
Redox Potential	mV	70.9
Turbidity	NTU	35.2

WATER APPEARANCE OR ODORS: slightly turbid w/ iron

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCl	N
PCBs	300 ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS Accutest	DELIVERED VIA	Courier
DATE	6/24/20		
WEATHER	hot mid 80s		
COMMENTS			

Signature: BM Gallo

Date: 6/23/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	S03M17 - 062420
PROJECT NO.	1041	WELL NO.	S03M17
SAMPLE DATE	06/24/20	SAMPLED BY	BAM
SAMPLE TIME	10:05	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	22.54		

FIELD MEASUREMENTS		
pH	Standard Units	~~6.60~~ 6.42
Specific Conductance	mS/cm	0.627
Water Temperature	°C	17.91
Dissolved Oxygen	ppm	0.66
Redox Potential	mV	-50.9
Turbidity	NTU	5.33

WATER APPEARANCE OR ODORS: clear w/ black particles

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3 / 3 / 3 / 3	Y	(N)	(Y) HCl	N
PCBs	300 ml	2 / 2 / 2 / 2	Y	(N)	Y	(N)
Metals	500 ml	1 / 1 / 1 / 1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
Geochem			Y	N	Y	N
DNA (to Microbial Insights)		1	Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	19		
LABORATORY	SGS Accutest	DELIVERED VIA	Courier — DATE 6/24/20
WEATHER	70s		

COMMENTS: MS/MSD 10:15 / 10:20 Duplicate 10:10 samples collected Geochem / DNA

Signature: BMCole

Date: 6/24/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503MIB-062420
PROJECT NO.	1041	WELL NO.	503MIB
SAMPLE DATE	Jun 24, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	10:35	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	22.90		

FIELD MEASUREMENTS		
pH	Standard Units	7.02
Specific Conductance	mS/cm	0.397
Water Temperature	°C	20.18
Dissolved Oxygen	ppm	0.92
Redox Potential	mV	-112.5
Turbidity	NTU	2.31

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 190 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCL	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) HNO3	N
Geochem Param	multiple	containers	(Y)	N	(Y)	N
MNA Params	3-40ml	3	Y	(N)	Y	(N)
Bacteria Parameters	1 L	1	Y	(N)	Y	(N)
			Y	N	Y	N

TOTAL NO. OF CONTAINERS: See Above

LABORATORY: 365/Microbial Insights

DELIVERED VIA: 365 courier/Fed Ex

DATE: 6/24/20

WEATHER: 85-90° Sunny

COMMENTS: Duplicate collected

Signature: [signature]

Date: 6/24/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SO3M20-062420
PROJECT NO.	1041	WELL NO.	SO3M20
SAMPLE DATE	6/24/2020	SAMPLED BY	MRS
SAMPLE TIME	17:15	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	4.05		

FIELD MEASUREMENTS		
pH	Standard Units	7.45
Specific Conductance	mS/cm	0.123
Water Temperature	°C	17.46
Dissolved Oxygen	ppm	6.05
Redox Potential	mV	111.3
Turbidity	NTU	12.0

WATER APPEARANCE OR ODORS ~~Clear~~, No odors, Red flecks

SAMPLING FLOW RATE 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	3 40mL	3	Y	(N)	(Y)	N
PCBs	3 300mL	2	Y	(N)	(Y)	(N)
Metals	1 500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 6/25/20
WEATHER	Cloudy; Mid 70's		
COMMENTS			

Signature: MRS Date: 6/24/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M21 - 062920
PROJECT NO.	1041	WELL NO.	503M21
SAMPLE DATE	June 29	SAMPLED BY	J. Ferguson
SAMPLE TIME	17:50	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	22.91		

FIELD MEASUREMENTS		
pH	Standard Units	7.22
Specific Conductance	mS/cm	0.425
Water Temperature	°C	17.29
Dissolved Oxygen	ppm	9.80
Redox Potential	mV	111.5
Turbidity	NTU	8.36

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCL	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA	SGS Courier DATE 6/30/20
WEATHER	85-90° Sunny		
COMMENTS			

Signature: [signature]

Date: 6/29/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME NSA Mechanicsburg	SAMPLE I.D. SWSM22-062520
PROJECT NO. 1041	WELL NO. SWSM22
SAMPLE DATE 6/25/20	SAMPLED BY MRS
SAMPLE TIME 16:10	SAMPLE SEQUENCE NUMBER
COLLECTION EQUIPMENT Bladder pump	
DEPTH TO WATER PRIOR TO SAMPLING (FT) 26.27	

FIELD MEASUREMENTS		
pH	Standard Units	6.04
Specific Conductance	mS/cm	0.520
Water Temperature	°C	16.94
Dissolved Oxygen	ppm	3.23
Redox Potential	mV	83.0
Turbidity	NTU	39.7

WATER APPEARANCE OR ODORS: Turbid w/ brown tint, No odors

SAMPLING FLOW RATE: 250 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS 6			
LABORATORY SGS	DELIVERED VIA FedEx	DATE 6/26/20	
WEATHER Cloudy, Low 80's			
COMMENTS			

Signature: MSH

Date: 6/25/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB3M41-062520
PROJECT NO.	1041	WELL NO.	SB3M41
SAMPLE DATE	6/25/20	SAMPLED BY	MRS
SAMPLE TIME	12:45/12:50	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	29.22		

FIELD MEASUREMENTS		
pH	Standard Units	6.78
Specific Conductance	mS/cm	2.467
Water Temperature	°C	18.82
Dissolved Oxygen	ppm	0.85
Redox Potential	mV	-66.0
Turbidity	NTU	29.7

WATER APPEARANCE OR ODORS: Turbid w/ bubbles, petroleum odor

SAMPLING FLOW RATE: 100 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y)	N
PCBs	300ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y)	N
Geochem		12	(Y)	N	(Y)	N
DNA	1L	1	Y	(N)	Y	(N)
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	19		
LABORATORY	TLS/Microbial	DELIVERED VIA Courier/FedEx	DATE 6/25/20
WEATHER	Sunny, Low 80's		
COMMENTS	1 collected duplicate - 12:50		

Signature: MRS

Date: 6/25/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	303M44-063020
PROJECT NO.	1041	WELL NO.	303M44
SAMPLE DATE	June 30, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	13:50	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	33.97		

FIELD MEASUREMENTS		
pH	Standard Units	7.24
Specific Conductance	mS/cm	0.752
Water Temperature	°C	17.16
Dissolved Oxygen	ppm	5.64
Redox Potential	mV	77.6
Turbidity	NTU	5.64

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCl	N
PCBs	250 ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA SGS Courier	DATE 6/30/20
WEATHER	85°-90° Sunny		
COMMENTS			

Signature: J—RB

Date: 6/30/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M45 - 063020
PROJECT NO.	1041	WELL NO.	503M45
SAMPLE DATE	6/30/2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	09:50	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	34.76		

FIELD MEASUREMENTS		
pH	Standard Units	7.69
Specific Conductance	mS/cm	0.488
Water Temperature	°C	16.14
Dissolved Oxygen	ppm	2.60
Redox Potential	mV	94.3
Turbidity	NTU	2.68

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 210 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCl	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) HNO3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA	SGS Courier
DATE	6/30/2020		
WEATHER	85-90° Sunny		
COMMENTS			

Signature: [signature]

Date: 6/30/2020

Admin/Forms/Environmental/water sample collection report

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SO3M46-063020
PROJECT NO.	1041	WELL NO.	SO3M46
SAMPLE DATE	JUNE 30, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	15:00	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	19.96		

FIELD MEASUREMENTS		
pH	Standard Units	7.24
Specific Conductance	mS/cm	0.956
Water Temperature	°C	16.79
Dissolved Oxygen	ppm	1.70
Redox Potential	mV	84.4
Turbidity	NTU	5.14

WATER APPEARANCE OR ODORS: CLEAR

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCl	N
PCBs	250 ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 7/1/20
WEATHER	85°-90° Sunny		
COMMENTS			

Signature: _____ Date: 6/30/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M48-062520
PROJECT NO.	1041	WELL NO.	503M48
SAMPLE DATE	Jun 25, 2020	SAMPLED BY	S. Ferguson
SAMPLE TIME	13.45	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	23.66		

FIELD MEASUREMENTS		
pH	Standard Units	7.00
Specific Conductance	mS/cm	0.717
Water Temperature	°C	20.30
Dissolved Oxygen	ppm	3.98
Redox Potential	mV	127.3
Turbidity	NTU	9.86

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCL	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) HNO3	(N)
Geochem Parameters	multiple	Containers	(Y)	N	(Y) HNO3	N
MNA	40ml	3	Y	(N)	Y	(N)
Bacteria	1 l	1	Y	(N)	Y	(N)
			Y	(N)	Y	N

TOTAL NO. OF CONTAINERS	multiple See above		
LABORATORY	SGS / Microbial Insights	DELIVERED VIA SGS / FED Ex	DATE 6/25/2020
WEATHER	85°-90° sun		
COMMENTS			

Signature: _____ Date: 6/25/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503MW9 -062520
PROJECT NO.	1041	WELL NO.	503MW9
SAMPLE DATE	Jun 25, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	16:31	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	16.42		

FIELD MEASUREMENTS		
pH	Standard Units	6.86
Specific Conductance	mS/cm	0.774
Water Temperature	°C	16.49
Dissolved Oxygen	ppm	8.10
Redox Potential	mV	5.2
Turbidity	NTU	43.1

WATER APPEARANCE OR ODORS: Slightly cloudy

SAMPLING FLOW RATE: 210 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCL	N
PCBs	250 ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO_3	N
GEOCHEMISTRY		MULTIPLE	(Y)	N	Y	N
MNA	40 ml	3	Y	(N)	Y	N
DECHLORINATING Bact.	1000 ml	1	Y	(N)	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS			
LABORATORY	SGS / MICROBIAL INSIGHTS	DELIVERED VIA	SGS Courier / FEDEX — DATE 6/25-26/2020
WEATHER	85°-90° Sunny		
COMMENTS			

Signature: _____ Date: 6/25/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME NSA Mechanicsburg	SAMPLE I.D. SO3M50-062520
PROJECT NO. 1041	WELL NO. SO3M50
SAMPLE DATE 6/25/20	SAMPLED BY MRS
SAMPLE TIME 9:30/9:35/9:40/9:45	SAMPLE SEQUENCE NUMBER
COLLECTION EQUIPMENT Bladder pump	
DEPTH TO WATER PRIOR TO SAMPLING (FT) 19.85	

FIELD MEASUREMENTS		
pH	Standard Units	6.92
Specific Conductance	mS/cm	1.092
Water Temperature	°C	17.01
Dissolved Oxygen	ppm	3.08
Redox Potential	mV	-27.0
Turbidity	NTU	51.4

WATER APPEARANCE OR ODORS: Clear w/ bubbles, no odors

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y (N)		(Y)	N
PCBs	300mL	2	Y (N)		Y	(N)
Metals	500mL	1	Y (N)		(Y)	N
Geochem	[illegible]	12	(Y)	N	(Y)	N
DNA	1L	1	Y (N)		Y	(N)
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS 19			
LABORATORY SGS/Microbial	DELIVERED VIA Courier/FedEx	DATE 6/25/20	
WEATHER Sunny, Low 70's			
COMMENTS Collected Dup/MS/MSD			

Signature: MRS

Dup: 9:35
MS: 9:40
MSD: 9:45

Date: 6/25/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503MS1-062520
PROJECT NO.	1041	WELL NO.	503MS1
SAMPLE DATE	Jun 25, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	18:30	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	17.92		

FIELD MEASUREMENTS		
pH	Standard Units	7.71
Specific Conductance	mS/cm	0.383
Water Temperature	°C	17.27
Dissolved Oxygen	ppm	12.04
Redox Potential	mV	134.4
Turbidity	NTU	4.67

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	(Y)	N	(Y) HCl	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	(Y)	N	(Y) HNO3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA SGS Courier	DATE 6/25/20
WEATHER	85-90 Sunny		
COMMENTS			

Signature: _____ Date: 6/25/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503MS2-062520
PROJECT NO.	1041	WELL NO.	503MS2
SAMPLE DATE	6/25/20	SAMPLED BY	MRS
SAMPLE TIME	18:10	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	26.86		

FIELD MEASUREMENTS		
pH	Standard Units	7.01
Specific Conductance	mS/cm	0.636
Water Temperature	°C	16.74
Dissolved Oxygen	ppm	1.62
Redox Potential	mV	134.3
Turbidity	NTU	8.79

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 100 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA FedEx	DATE 6/26/20
WEATHER	Sunny, Low 80's		
COMMENTS			

Signature: MRS

Date: 6/25/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503 MS4 062420
PROJECT NO.	1041	WELL NO.	503 MS4
SAMPLE DATE	6/24/2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	14:35	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	16.98		

FIELD MEASUREMENTS		
pH	Standard Units	7.72
Specific Conductance	mS/cm	0.691
Water Temperature	°C	23.25
Dissolved Oxygen	ppm	0.65
Redox Potential	mV	-189.2
Turbidity	NTU	5.47

WATER APPEARANCE OR ODORS: c/m

SAMPLING FLOW RATE: 200 mL/min

TOC 40 ml 2 H H
TOTAL SulFide 250 ml 2 H Y NaOH/ZnAc

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCL	N
PCBs	250 ml	2	Y	(N)	Y	(N)
Metals TOTAL	500 ml	1	Y	(N)	(Y) HNO_3	N
NaCl	250 ml	1	Y	(N)	(Y) ZnAc	N
NH_3	250 ml	1	Y	(N)	(Y) H_2SO_4	N
Cl/SO4	500 ml	1	Y	(N)	Y	(N)
Diss Fe	500 ml	1	(Y)	N	(Y) HNO_3	N
NO3/NO2	250 ml	2		(N)	(Y) H_2SO_4	

TOTAL NO. OF CONTAINERS	14		
LABORATORY	SGS / Microbial Insights	DELIVERED VIA	SGS Courier / FedEx DATE 6-24-20
WEATHER	85°-90°		
COMMENTS			

Signature: J. Ferguson Date: 6/24/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M57-062320
PROJECT NO.	1041	WELL NO.	503M57
SAMPLE DATE	June 23, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	17:45	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	14.26		

FIELD MEASUREMENTS		
pH	Standard Units	7.09
Specific Conductance	mS/cm	0.388
Water Temperature	°C	19.80
Dissolved Oxygen	ppm	0.88
Redox Potential	mV	-84.8
Turbidity	NTU	3.05

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCl	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) HNO3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA SGS Courier	DATE 6/24/20
WEATHER	85-90° Sunny		
COMMENTS			

Signature: [signature]

Date: 6/23/20

Admin/Forms/Environmental/water sample collection report

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB1625-062920
PROJECT NO.	1041	WELL NO.	SB1625
SAMPLE DATE	6/29/20	SAMPLED BY	MRS
SAMPLE TIME	18:30	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	33.29		

FIELD MEASUREMENTS		
pH	Standard Units	7.07
Specific Conductance	mS/cm	0.466
Water Temperature	°C	16.04
Dissolved Oxygen	ppm	7.35
Redox Potential	mV	73.9
Turbidity	NTU	1.50

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 150 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	TGS	DELIVERED VIA Courier	DATE 6/30/20
WEATHER	Sunny, High 80s		
COMMENTS			

Signature: MRS

Date: 6/29/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB3MW301-062620
PROJECT NO.	1041	WELL NO.	SB3MW301
SAMPLE DATE	6/26/20	SAMPLED BY	MRS
SAMPLE TIME	11:10	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	34.51		

FIELD MEASUREMENTS		
pH	Standard Units	12.07
Specific Conductance	mS/cm	4.517
Water Temperature	°C	17.17
Dissolved Oxygen	ppm	1.69
Redox Potential	mV	74.4
Turbidity	NTU	7.00

WATER APPEARANCE OR ODORS: Clear, light sheen, no odor

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 mL	3	Y	(N)	(Y)	N
PCBs	300 mL	2	Y	(N)	Y	(N)
Metals	500 mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	TGS	DELIVERED VIA FedEx	DATE 6/26/20
WEATHER	Sunny, High 70's		
COMMENTS			

Signature: MRS Date: 6/26/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB3MW302-062620
PROJECT NO.	1041	WELL NO.	SB3MW302
SAMPLE DATE	6/26/20	SAMPLED BY	MRS
SAMPLE TIME	9:05	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	38.28		

FIELD MEASUREMENTS		
pH	Standard Units	11.68
Specific Conductance	mS/cm	2.119
Water Temperature	°C	17.45
Dissolved Oxygen	ppm	1.23
Redox Potential	mV	121.6
Turbidity	NTU	2.45

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 150 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA FedEx	DATE 6/26/20
WEATHER	Sunny, High 60's		
COMMENTS			

Signature: MRS Date: 6/26/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M63D3-062520
PROJECT NO.	1041	WELL NO.	503M63D3
SAMPLE DATE	Jun 25, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	10:37	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	33.48		

FIELD MEASUREMENTS		
pH	Standard Units	11.59
Specific Conductance	mS/cm	1.412
Water Temperature	°C	18.00
Dissolved Oxygen	ppm	3.99
Redox Potential	mV	39.2
Turbidity	NTU	29.9

WATER APPEARANCE OR ODORS: slightly cloudy

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCl	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) 1/HNO3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 6-25-20
WEATHER	78°-90° Sunny		
COMMENTS			

Signature: _____ Date: 6-25-20

Admin/Forms/Environmental/water sample collection report

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M64D1-062420
PROJECT NO.	1041	WELL NO.	503M64D1
SAMPLE DATE	June 24, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	17:10	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	35.21		

FIELD MEASUREMENTS		
pH	Standard Units	12.15
Specific Conductance	mS/cm	5.124
Water Temperature	°C	19.84
Dissolved Oxygen	ppm	1.90
Redox Potential	mV	-37.8
Turbidity	NTU	7.61

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 210 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	(Y)	N	(Y) HCL	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	(Y)	N	(Y) HNO3	N
Geochem Parm	multiple	containers	(Y)	N	(Y) HNO3	N
MNA	3-40ml	3	Y	(N)	Y	(N)
Bacteria	1 l	1	Y	(N)	Y	(N)
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	See Above		
LABORATORY	365/Microbial Insights	DELIVERED VIA	365 Courier / Microbial Insights FedEx
WEATHER	85-90° Sunny	DATE	6/25/2020
COMMENTS	Dup/MS/MSD collected		

Signature: [signature]

Date: 6/24/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503MG402-062620
PROJECT NO.	1041	WELL NO.	503MG402
SAMPLE DATE	6/26/20	SAMPLED BY	MRS
SAMPLE TIME	12:55	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	43.12		

FIELD MEASUREMENTS		
pH	Standard Units	11.56
Specific Conductance	mS/cm	2.016
Water Temperature	°C	18.51
Dissolved Oxygen	ppm	0.65
Redox Potential	mV	83.6
Turbidity	NTU	9.57

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 200 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA FedEx	DATE 6/26/20
WEATHER	Sunny, High 70's		
COMMENTS			

Signature: MRS

Date: 6/26/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M65 - 062920
PROJECT NO.	1041	WELL NO.	503M65
SAMPLE DATE	6/29/2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	13:30	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	24.64		

FIELD MEASUREMENTS		
pH	Standard Units	9.46
Specific Conductance	mS/cm	0.300
Water Temperature	°C	17.80
Dissolved Oxygen	ppm	1.28
Redox Potential	mV	-145.8
Turbidity	NTU	7.98

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 220 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCl	N
PCBs	250 ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA	SGS Courier
WEATHER	85°-90° Sunny	DATE	6/30/20
COMMENTS			

Signature: _____ Date: 6/29/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503MG601-063020
PROJECT NO.	1041	WELL NO.	503MG601
SAMPLE DATE	6/30/20	SAMPLED BY	MRS
SAMPLE TIME	11:15	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	25.56		

FIELD MEASUREMENTS		
pH	Standard Units	11.10
Specific Conductance	mS/cm	1.378
Water Temperature	°C	18.15
Dissolved Oxygen	ppm	1.77
Redox Potential	mV	89.4
Turbidity	NTU	8.44

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 150 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Carrier	DATE 6/30/20
WEATHER	Sunny, High 70s		
COMMENTS			

Signature: MRS

Date: 6/30/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB-MW602-063020
PROJECT NO.	1041	WELL NO.	SB-MW602
SAMPLE DATE	6/30/20	SAMPLED BY	MR
SAMPLE TIME	13:05	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	28.52		

FIELD MEASUREMENTS		
pH	Standard Units	11.20
Specific Conductance	mS/cm	1.512
Water Temperature	°C	19.17
Dissolved Oxygen	ppm	1.65
Redox Potential	mV	18.7
Turbidity	NTU	8.52

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 150 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 mL	3	Y	(N)	(Y)	N
PCBs	300 mL	2	Y	(N)	Y	(N)
Metals	500 mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 6/30/20
WEATHER	Sunny, Low 80's		
COMMENTS			

Signature: [signature]

Date: 6/30/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB16701-070120
PROJECT NO.	1041	WELL NO.	SB16701
SAMPLE DATE	7/1/20	SAMPLED BY	MRS
SAMPLE TIME	11:20	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	28.99		

FIELD MEASUREMENTS		
pH	Standard Units	7.09
Specific Conductance	mS/cm	0.486
Water Temperature	°C	17.33
Dissolved Oxygen	ppm	1.60
Redox Potential	mV	97.6
Turbidity	NTU	4.81

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 100 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 mL	3	Y	(N)	(Y)	N
PCBs	300 mL	2	Y	(N)	Y	(N)
Metals	500 mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 7/1/20
WEATHER	Sunny, Low 80s		
COMMENTS			

Signature: MRS

Date: 7/1/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503MW7D2-070120
PROJECT NO.	1041	WELL NO.	503MW7D2
SAMPLE DATE	7/1/20	SAMPLED BY	MRS
SAMPLE TIME	12:45	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	32.33		

FIELD MEASUREMENTS		
pH	Standard Units	6.90
Specific Conductance	mS/cm	0.404
Water Temperature	°C	16.44
Dissolved Oxygen	ppm	0.86
Redox Potential	mV	2.1
Turbidity	NTU	2.50

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 175 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 7/1/20
WEATHER	Sunny, Mid 80's		
COMMENTS			

Signature: MRS

Date: 7/1/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503MC801-063020
PROJECT NO.	1041	WELL NO.	503MC801
SAMPLE DATE	6/30/20	SAMPLED BY	MRS
SAMPLE TIME	15:45	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	27.61		

FIELD MEASUREMENTS		
pH	Standard Units	6.99
Specific Conductance	mS/cm	0.615
Water Temperature	°C	16.06
Dissolved Oxygen	ppm	1.40
Redox Potential	mV	60.4
Turbidity	NTU	6.25

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 100 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 7/1/20
WEATHER	Sunny, Mid 80s		
COMMENTS			

Signature: MRS

Date: 6/30/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M68D2-063020
PROJECT NO.	1041	WELL NO.	503M68D2
SAMPLE DATE	6/30/20	SAMPLED BY	MRS
SAMPLE TIME	17:45	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	34.03		

FIELD MEASUREMENTS		
pH	Standard Units	6.95
Specific Conductance	mS/cm	0.674
Water Temperature	°C	15.69
Dissolved Oxygen	ppm	1.08
Redox Potential	mV	~~4.02~~ -45.0
Turbidity	NTU	4.02

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 150 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 mL	3	Y	(N)	(Y)	N
PCBs	300 mL	2	Y	(N)	Y	(N)
Metals	500 mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 7/1/20
WEATHER	Sunny, High 80s		
COMMENTS			

Signature: MRS

Date: 6/30/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M69D1 ~~-07-20~~ 06/30/20
PROJECT NO.	1041	WELL NO.	503M69D1
SAMPLE DATE	6/30/20	SAMPLED BY	J. Ferguson
SAMPLE TIME	18:45	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	39.04		

FIELD MEASUREMENTS		
pH	Standard Units	7.23
Specific Conductance	mS/cm	0.546
Water Temperature	°C	19.03
Dissolved Oxygen	ppm	3.80
Redox Potential	mV	-46.1
Turbidity	NTU	2.80

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 195 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCl	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA SGS Courier	DATE 6/30/2020
WEATHER	85-90° Sunny		
COMMENTS			

Signature: _____ Date: 6/30/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M69D2 - 06302020
PROJECT NO.	1041	WELL NO.	503M69D2
SAMPLE DATE	June 30, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	17:05	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	39.27		

FIELD MEASUREMENTS		
pH	Standard Units	7.27
Specific Conductance	mS/cm	0.584
Water Temperature	°C	15.36
Dissolved Oxygen	ppm	1.67
Redox Potential	mV	-27.2
Turbidity	NTU	2.61

WATER APPEARANCE OR ODORS

SAMPLING FLOW RATE 210 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCL	N
PCBs	250 ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA SGS Courier	DATE 6/30/2020
WEATHER	85°-90° Sunny		
COMMENTS			

Signature: _____ Date: 6/30/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB1170-062920
PROJECT NO.	1041	WELL NO.	SB1170
SAMPLE DATE	6/29/20	SAMPLED BY	MRS
SAMPLE TIME	12:55	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	37.15		

FIELD MEASUREMENTS		
pH	Standard Units	6.70
Specific Conductance	mS/cm	0.741
Water Temperature	°C	18.19
Dissolved Oxygen	ppm	0.91
Redox Potential	mV	-70.5
Turbidity	NTU	6.03

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 150 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	500mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Carrier	DATE 6/30/20
WEATHER	Sunny, High 80s		
COMMENTS			

Signature: MRS Date: 6/29/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB-MW11-062920
PROJECT NO.	1041	WELL NO.	SB-MW11
SAMPLE DATE	6/29/20	SAMPLED BY	MRS
SAMPLE TIME	14:50	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	41.23		

FIELD MEASUREMENTS		
pH	Standard Units	8.59
Specific Conductance	mS/cm	0.230
Water Temperature	°C	21.07
Dissolved Oxygen	ppm	1.32
Redox Potential	mV	-37.2
Turbidity	NTU	6.76

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 100 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 6/29/20
WEATHER	Sunny, Mid 80's		
COMMENTS			

Signature: MRS

Date: 6/29/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	SB-MW2-062920
PROJECT NO.	1041	WELL NO.	SB-MW2
SAMPLE DATE	6/29/20	SAMPLED BY	MRS
SAMPLE TIME	12:55	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	33.23		

FIELD MEASUREMENTS		
pH	Standard Units	12.00
Specific Conductance	mS/cm	3.067
Water Temperature	°C	22.09
Dissolved Oxygen	ppm	0.89
Redox Potential	mV	-40.0
Turbidity	NTU	0.35

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 100 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	TGS	DELIVERED VIA Carrier	DATE 6/30/20
WEATHER	Sunny, Low 80s		
COMMENTS			

Signature: MRS

Date: 6/29/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	503M73D1-062926
PROJECT NO.	1041	WELL NO.	503M73D1
SAMPLE DATE	June 26 2020	SAMPLED BY	S. Ferguson
SAMPLE TIME	12:00	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	31.91		

FIELD MEASUREMENTS		
pH	Standard Units	7.10
Specific Conductance	mS/cm	0.491
Water Temperature	°C	17.94
Dissolved Oxygen	ppm	2.27
Redox Potential	mV	-65.0
Turbidity	NTU	8.57

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 210 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCL	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA SGS Courier	DATE 6/29/2020
WEATHER	85-90° Sunny		
COMMENTS			

Signature: _____ Date: 6/29/2020

Admin/Forms/Environmental/water sample collection report

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	303M73D2-062620
PROJECT NO.	1041	WELL NO.	303M73D2
SAMPLE DATE	Jun 26, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	16:35	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	33.98		

FIELD MEASUREMENTS		
pH	Standard Units	7.50
Specific Conductance	mS/cm	0.373
Water Temperature	°C	19.29
Dissolved Oxygen	ppm	11.64
Redox Potential	mV	-24.3
Turbidity	NTU	10.3

WATER APPEARANCE OR ODORS: Clear

SAMPLING FLOW RATE: 220 mL/min

SAMPLE TYPE INFORMATION

PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40ml	3	Y	(N)	(Y) HCL	N
PCBs	250ml	2	Y	(N)	Y	(N)
Metals	500ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA	SGS Courier DATE 6/26/2020
WEATHER	80-90° Sunny		
COMMENTS			

Signature: _____ Date: 6/26/2020

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	001-070120
PROJECT NO.	1041	WELL NO.	00-1
SAMPLE DATE	7/1/20	SAMPLED BY	JRF/MRS
SAMPLE TIME	9:25	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	25.84		

FIELD MEASUREMENTS		
pH	Standard Units	6.94
Specific Conductance	mS/cm	0.257
Water Temperature	°C	14.39
Dissolved Oxygen	ppm	3.38
Redox Potential	mV	142.0
Turbidity	NTU	6.68

WATER APPEARANCE OR ODORS: Clear, No odors

SAMPLING FLOW RATE: 250 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40mL	3	Y	(N)	(Y)	N
PCBs	300mL	2	Y	(N)	Y	(N)
Metals	500mL	1	Y	(N)	(Y)	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA Courier	DATE 7/1/20
WEATHER	Sunny, Low 70s		
COMMENTS			

Signature: MRS

Date: 7/1/20

AMS RHEA JV

WATER SAMPLE COLLECTION REPORT

PROJECT NAME	NSA Mechanicsburg	SAMPLE I.D.	DD-7D-070120
PROJECT NO.	1041	WELL NO.	DD-7D
SAMPLE DATE	July 1, 2020	SAMPLED BY	J. Ferguson
SAMPLE TIME	12:40	SAMPLE SEQUENCE NUMBER	
COLLECTION EQUIPMENT	Bladder pump		
DEPTH TO WATER PRIOR TO SAMPLING (FT)	23.78		

FIELD MEASUREMENTS		
pH	Standard Units	7.07
Specific Conductance	mS/cm	0.476
Water Temperature	°C	15.20
Dissolved Oxygen	ppm	5.30
Redox Potential	mV	104.1
Turbidity	NTU	5.69

WATER APPEARANCE OR ODORS

SAMPLING FLOW RATE 200 mL/min

SAMPLE TYPE INFORMATION						
PARAMETER	VOLUME	NO. CONTAINERS	FIELD FILTERED		PRESERVED	
VOCs	40 ml	3	Y	(N)	(Y) HCl	N
PCBs	250 ml	2	Y	(N)	Y	(N)
Metals	500 ml	1	Y	(N)	(Y) HNO_3	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N
			Y	N	Y	N

TOTAL NO. OF CONTAINERS	6		
LABORATORY	SGS	DELIVERED VIA	~~FEDEX~~ COURIER DATE 7/1/2020
WEATHER	88°-90° SUNNY		
COMMENTS			

Signature: _____ Date: 7/1/2020

Admin/Forms/Environmental/water sample collection report

APPENDIX A-3

Chains of Custody

SGS ACCUTEST

GW TB

CHAIN OF CUSTODY

SGS Accutest - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

 E

FED-EX Tracking #:
Bottle Order Control #: KR-062020-204
SGS Accutest Quote #:
SGS Accutest Job #: JD8742

Client / Reporting Information

Company Name: Rhen Engineers + Cons.
Street Address: 441 Mars Valencia Road
City: Valencia State: PA Zip: 16059
Project Contact: Brad McCalla E-mail:
Phone #: 724-443-4111 Fax #:
Sampler(s) Name(s): J. Ferguson / Mike Stoeder Phone #: 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City: State:
Project #: 1041
Client Purchase Order #:
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes
DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VOC 8260 C+1,3,5-TMB	Total Metals 3010A 6010C	8082 (3510C/1260)	Alkalinity 2320B-11	Ammonia SM4500NH3H-11	CL/SO4 EPA 300	Dissolved Fe 3010A/6010C	NO2/NO3 353.2	Total Sulfide	TOC 5310	MEE RSK 175	LAB USE ONLY
1	503 M 57-062320		6/23/2020	17:45	JRF	GW		X		X						3	1	2									E3
2	503 M 16-062320		6/23/2020	17:45	BAM	GW		X		X						3	1	2									A27
3	TB 062320		6/23/2020	17:00	JRF	GW		X		X						3	—	—									GU4
4	503 M18-062420		6/24/2020	10:35	JRF	GW		X		X	X			X		3	1	2	1	1	1	1	2	2	1	3	14C1
5	503 M17-062420		6/24/2020	10:05	BAM	GW		X		X	X			X		3	1	2	1	1	1	1	2	2	1	3	
6	503 M17D-062420		6/24/2020	10:10	BAM	GW		X		X						3	1	2	—	—	—	—	—	—	—	—	
5 (	503 M17MS-062420		6/24/2020	10:15	BAM	GW		X		X						3	1	2	—	—	—	—	—	—	—	—	
	503 M17MSD-062420		6/24/2020	10:20	BAM	GW		X		X						3	1	2	—	—	—	—	—	—	—	—	
7	503 M18-062420 DUP		6/24/2020	10:35	JRF	GW		X		X						3	1	2	—	—	—	—	—	—	—	—	
8	503 M54-062420		6/24/2020	14:35	JRF	GW		X		X				X		3	1	2	1	1	1	1	2	2	1	3	
9	503M14-062420		6/24/20	14:10	MRS	GW		X		X						3	1	2									

Turnaround Time (Business days)

- [x] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Approved By (SGS Accutest PM): / Date:

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] *NJ Data of Known Quality Protocol Reporting*
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only, Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Select VOCs

Initial Assessment 2B PP
Label Verification

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1 [signature]	Date Time: 6/24/20/15:03	Received By: 1 [signature]	Relinquished By: 2 [signature]	Date Time: 6/25/20 1814	Received By: 2 [signature]
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	☐ Intact ☐ Not intact	Preserved where applicable ☐ On Ice ☑ Cooler Temp. 2.0°C IR 2.1

SGS Sample Receipt Summary

Job Number: JD8742 **Client:** RHEA ENGINEERS & CONSULTANTS INC **Project:** LABELS! RAOMAC-MID-ATLANTIC NAVY. MEC

Date / Time Received: 6/24/2020 6:44:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0); Cooler 2: (2.1);

Cooler Temps (Corrected) °C: Cooler 1: (1.7); Cooler 2: (1.8);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	2	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☑	☐	☐
2. Trip Blank listed on COC:	☑	☐	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☑	☐	☐

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Test Strip Lot #s: pH 1-12: 229517 pH 12+: 208717 Other: (Specify)

Comments

SGS Sample Receipt Summary

Job Number: JD8742 **Client:** RHEA ENGINEERS & CONSULTANTS INC **Project:** LABELS! RAOMAC-MID-ATLANTIC NAVY. MEC

Date / Time Received: 6/25/2020 5:01:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 3: (3.1); Cooler 4: (3.6); Cooler 5: (3.4);

Cooler Temps (Corrected) °C: Cooler 3: (2.8); Cooler 4: (3.3); Cooler 5: (3.1);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	3	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☑	☐	☐
2. Trip Blank listed on COC:	☑	☐	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☑	☐	☐

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Test Strip Lot #s: pH 1-12: 229517 pH 12+: 208717 Other: (Specify)

Comments

SGS

GW TB EB

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www.sgs.com/ehsusa

 E

FED-EX Tracking #: | Bottle Order Control #: KK-06120-88
SGS Quote #: | SGS Job #: JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants
Street Address: 441 Mars Valencia Road
City: Valencia | State: PA | Zip: 16059
Project Contact: Brad McCalla | E-mail: brad.mccalla@rhea.us
Phone #: 724-443-4111 | Fax #:
Sampler(s) Name(s) / Phone #: Mike Stock / Tom Riggs 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City: | State:
Project #: 1041
Client Purchase Order #: 1041-11
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City: | State: | Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Preserved: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SL - Select VOCs + 1,2,4 - TMB	P8082PCB1260 - PCBs (Aroclor 1260)	6010 - Metals (ASMS/Mn/Fe)	SM2320 B-11 - Alkalinity	SM4500NH 3 H-11 Lachat - Ammonia	300 - Chloride/Sulfate	6010 - Dissovled Iron (DISS FF)	353.2/SM4500 NO2B - Nitrate/Nitrite (XNO3O)	SM4500S2-F-11 - Total Sulfide	SM5310 - Total Organic Carbon	VRSK175DGMEE - Methane, Ethane, Ethene	LAB USE ONLY
10 1	EB-062420	10	6/24/20	15:50	MRS	GW	5	2		1		2				X	X	X									E56
11 2	SO3M50-062420	11		17:15	MRS		6	3		1		2				X	X	X									A27
12 3	[redacted]-062420	12		17:10	JF		18									X	X	X	X	X	X	X	X	X	X	X	G60
13 4	[redacted]-062420	13					6	3		1		2				X	X	X									G7 T1
12 5	SO3M50MS-062420	12					1																				19C1
6	SO3M50MSD-062420																										V784
14 7	[redacted]-062420	14		18:25	MRS		2									X											
15 8	SO3M50-062520	14	6/25/20	9:30			18									X	X	X	X	X	X	X	X	X	X	X	
16 9	SO3M50D-062520	15		9:35			6	3		1		2				X	X	X									
15 10	SO3M50MS-062520	14		9:40																							
11	SO3M50MSD-062520			9:45																							

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other
- [ ] *NJ Data of Known Quality Protocol Reporting*

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Select VOCs - 1,4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1,2-DCE; TCE; Vinyl Chloride

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 6/25/20 14:43	Received By: 1	Relinquished By: 2	Date Time: 6/25/20 17:01	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp.

Initial Assessment 3 Aok

Label Verification

H_2SO_4, ice pH <2
NaOH + Zn Ace pH >12

3.1 3.6 3.4 CP

Form:SM088-03C (revised 2/12/18)

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PAGE 1 OF 2

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants
Street Address: 441 Mars Valencia Road
City / State / Zip: Valencia, PA 16059
Project Contact / E-mail: Brad McCalla brad.mccalla@rhea.us
Phone # / Fax #: 724-443-4111
Sampler(s) Name(s) / Phone #: MikeStoar/JimFeggs 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City / State:
Project #: 1041
Client Purchase Order #: 1041-11
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SL - Select VOCs + 1,2,4 - TMB	P8082PCB1260 - PCBs (Aroclor 1260)	6010 - Metals (ASMS/Mn/Fe)	SM2320 B-11 - Alkalinity	SM4500NH 3 H-11 Lachat - Ammonia	300 - Chloride/Sulfate	6010 - Dissovled Iron (DISS FF)	353.2/SM4500 NO2B - Nitrate/Nitrite (XNO3O)	SM4500S2-F-11 - Total Sulfide	SM5310 - Total Organic Carbon	VRSK175DGMEE - Methane, Ethane, Ethene	Matrix Code
	EB-062420		6/24/20	15:50	MRS	GW	5	2		1		2				X	X	X									
	S03M20-062420			17:15	MRS		6	3		1		2				X	X	X									
	S03MK401-062420			17:10	JF		18									X	X	X	X	X	X	X	X	X	X	X	
	S03MK401D-062420						6	3		1		2				X	X	X									
	S03MK401MS-062420																										
	S03MK401MSD-062420																										
	TB-062420			18:25	MRS		2									X											
	S03M50-062520		6/25/20	9:30			18									X	X	X	X	X	X	X	X	X	X	X	
	S03M50D-062520			9:35			6	3		1		2				X	X	X									
	S03M50MS-062520			9:40																							
	S03M50MSD-062520			9:45																							

Turnaround Time (Business days)

Approved by (SGS Project Manager)/Date:

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Select VOCs - 1,4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1,2-DCE; TCE; Vinyl Chloride

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		6/25/20 14:43	1	2		2
3			3	4		4
5			5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable

Form:SM088-03C (revised 2/12/18)

http://www.sgs.com/en/terms-and-conditions

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www.sgs.com/ehsusa

FED-EX Tracking # | Bottle Order Control #
SGS Quote # | SGS Job # JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants
Street Address: 441 Mars Valencia Road
City: Valencia, PA State: Zip: 16059
Project Contact: Brad McCalla E-mail: brad.mccalla@rhea.us
Phone #: 724-443-4111 Fax #:
Sampler(s) Name(s): Mike Stoehr/Jim Ferguson Phone #: 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City: State:
Project #: 1041
Client Purchase Order #: 1041-11
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SL - Select VOCs + 1,2,4 - TMB	P8082PCB1260 - PCBs (Aroclor 1260)	6010 - Metals (ASMS/Mn/Fe)	SM2320 B-11 - Alkalinity	SM4500NH 3 H-11 Lachat - Ammonia	300 - Chloride/Sulfate	6010 - Dissovled Iron (DISS FF)	353.2/SM4500 NO2B - Nitrate/Nitrite (XNO3O)	SM4500S2-F-11 - Total Sulfide	SM5310 - Total Organic Carbon	VRSK175DGMEE - Methane, Ethane, Ethene	LAB USE ONLY
12	S03M6303-062520	17F	15	6/25/20	10:37	JF	GW	18								X	X	X	X	X	X	X	X	X	X	X	
13	S03M41-062520	18F	16		12:45	MRS		18								X	X	X	X	X	X	X	X	X	X	X	
14	S03M41D-062520	19	17		12:50	MRS		6	3		1		2			X	X	X									
15	S03M48-062520	20F	18		13:45	JF		18								X	X	X	X	X	X	X	X	X	X	X	

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Select VOCs - 1,4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1,2-DCE; TCE; Vinyl Chloride

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler: MS	Date/Time: 6/25/20 14:43	1 Received By: JS	2 Relinquished By: JS	Date/Time: 6/25/20	2 Received By: JF
3 Relinquished by Sampler:	Date Time:	3 Received By:	4 Relinquished By:	Date Time:	4 Received By:
5 Relinquished by:	Date Time:	5 Received By:	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp.

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

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TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants
Street Address: 441 Mars Valencia Road
City: Valencia | State: PA | Zip: 16059
Project Contact: Brad McCalla | E-mail: brad.mccalla@rhea.us
Phone #: 724-443-4111 | Fax #:
Sampler(s) Name(s): Mike Stoltz/Jim Ferguson | Phone #: 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City: | State:
Project #: 1041
Client Purchase Order #: 1041-11
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City: | State: | Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SL - Select VOCs + 1,2,4 - TMB	P8082PCB1260 - PCBs (Aroclor 1260)	6010 - Metals (ASMS/Mn/Fe)	SM2320 B-11 - Alkalinity	SM4500NH 3 H-11 Lachat - Ammonia	300 - Chloride/Sulfate	6010 - Dissovled Iron (DISS FF)	353.2/SM4500 NO2B - Nitrate/Nitrite (XNO3O)	SM4500S2-F-11 - Total Sulfide	SM5310 - Total Organic Carbon	VRSK175DGMEE - Methane, Ethane, Ethene	LAB USE ONLY
	S03M303-062520		6/25/20	10:37	JF	GW	18									X	X	X	X	X	X	X	X	X	X	X
	S03M41-062520			12:45	MRS		18									X	X	X	X	X	X	X	X	X	X	X
	S03M41D-062520			12:50	MRS		6	3	1		2					X	X	X								
	S03M48-062520			13:45	JF		18									X	X	X	X	X	X	X	X	X	X	X

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SCL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

Turnaround Time (Business days)

Approved by (SGS Project Manager)/Date:

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Select VOCs - 1,4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1,2-DCE; TCE; Vinyl Chloride

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	[signature]	6/25/20 14:43	[signature]	2		2
3			3	4		4
5			5			

Custody Seal # | [ ] Intact [ ] Not intact | Preserved where applicable | On Ice | Cooler Temp.

http://www.sgs.com/en/terms-and-conditions.

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GW WTB

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PAGE 1 OF 1

8898

FedEx Tracking # 3942 6258 8900 | Bottle Order Control # KR-061120-88
SGS Quote # | SGS Job # JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants
Street Address: 441 Mars Valencia Road
City / State / Zip: Valencia, PA 16059
Project Contact / E-mail: Brad McCalla brad.mccalla@rhea.us
Phone # / Fax #: 724-443-4111
Sampler(s) Name(s) / Phone #: Mike Sharpe / Jim Ferguson 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City / State:
Project #: 1041
Client Purchase Order #: 1041-11
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SL - Select VOCs + 1,2,4 - TMB	P8082PCB1260 - PCBs (Aroclor 1260)	6010 - Metals (ASMS/Mn/Fe)	SM2320 B-11 - Alkalinity	SM4500NH 3 H-11 Lachat - Ammonia	300 - Chloride/Sulfate	6010 - Dissovled Iron (DISS FF)	353.2/SM4500 NO2B - Nitrate/Nitrite (XNO3O)	SM4500S2-F-11 - Total Sulfide	SM5310 - Total Organic Carbon	VRSK175DGMEE - Methane, Ethane, Ethene	LAB USE ONLY
21F	S03M22-062520		6/25/20	16:10	MRS	GW	6	3		1		2				X	X	X									
22	S03M49-062520			16:31	JF		18									X	X	X	X	X	X	X	X	X	X	X	
23	S03M52-062520			18:10	MRS		6	3		1		2				X	X	X									E16
24	S03M51-062520			18:30	JF		6	3		1		2				X	X	X									A15
25	S03MG3D2-062620		6/26/20	9:05	MRS			1		1		1															M24
26	S03MG3D1-062620			11:10	MRS																						G7T3
27	S03MG4D2-062620			12:55	MRS																						19M2
28	S03MG5D-062620			13:30	JF			3		1		2				X	X	X									V808
29	S03MG7D1-062620			12:00	JF			3		1		2				X	X	X									
30	S03MG7D2-062620			[illegible]	JF			3		1		2				X	X	X									
31	TB-062620			13:55			2	2								X											

Turnaround Time (Business days)

Data Deliverable Information

Comments / Special Instructions

Select VOCs - 1,4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1,2-DCE; TCE; Vinyl Chloride

S03G3D1 - only one VOA - Use caution

Sample inventory is verified upon receipt in the Laboratory

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:
Initial Assessment 3A-RP
Label Verification
6/26/20 MRS

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by	Date Time	Received By	Date Time
1		6/26/20 2:25	FedEx Ch26b20	
2	Fedex	6/27/2020 9:30	bl	
3		14:25	8118 2250 1462	
4				
5				

Custody Seal # 081502 ☑ Intact ☐ Not intact — Preserved where applicable ☐ — On Ice ☑ IR4 — Cooler Temp. 3.2°C

081552 3.4°C Tp

Form:SM088-03C (revised 2/12/18)

http://www.sgs.com/en/terms-and-conditions.

CHAIN OF CUSTODY

GW/TB

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FED-EX Tracking #:
Bottle Order Control #: KR-061120-88
SGS Quote #:
SGS Job #: JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants
Street Address: 441 Mars Valencia Road
City / State / Zip: Valencia, PA 16059
Project Contact / E-mail: Brad McCalla brad.mccalla@rhea.us
Phone # / Fax #: 724-443-4111
Sampler(s) Name(s) / Phone #: Mike Stoehr/Jim Ferguson 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City / State:
Project #: 1041
Client Purchase Order #: 1041-11
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SL - Select VOCs + 1,2,4 - TMB	P8082PCB1260 - PCBs (Aroclor 1260)	6010 - Metals (ASMS/Mn/Fe)	SM2320 B-11 - Alkalinity	SM4500NH 3 H-11 Lachat - Ammonia	300 - Chloride/Sulfate	6010 - Dissovled Iron (DISS FF)	353.2/SM4500 NO2B - Nitrate/Nitrite (XNO3O)	SM4500S2-F-11 - Total Sulfide	SM5310 - Total Organic Carbon	VRSK175DGMEE - Methane, Ethane, Ethene	LAB USE ONLY
32	S03M72-062920		6/29/20	12:55	MRS	GW	6	3		1		2				X	X	X									V818
33	S03M71-062920			14:50																							E100
34	S03M70-062920			16:35																							A22
35	S03M62S-062920			18:30																							
36	S03M21-062920			17:50	JRF																						
37	S03M07-062920			16:00																							
38	S03M02-062920			14:15																							
39	S03M03-062920			19:40																							
40	S03M13-063020		6/30/20	9:30	MRS																						
41	S03M45-063020			9:50	JRF																						
42	S03M66D-063020			11:15	MRS																						

Initial Assessment 2A JS
Label Verification

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Select VOCs - 1,4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1,2-DCE; TCE; Vinyl Chloride

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: [illegible]	Received By: 1 Robertschambers	Relinquished By: 2 Robertschambers	Date Time: 6/30/20 1708	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable ✓ HNO3 pH<2

On Ice: [ ] Cooler Temp: IR 3.2°C, 3.1°C

http://www.sgs.com/en/terms-and-conditions.

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking #:
Bottle Order Control #:
SGS Quote #:
SGS Job #: JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants
Street Address: 441 Mars Valencia Road
City / State / Zip: Valencia, PA 16059
Project Contact / E-mail: Brad McCalla brad.mccalla@rhea.us
Phone # / Fax #: 724-443-4111
Sampler(s) Name(s) / Phone #: Mike Stoch/Jim Ferguson 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City / State:
Project #: 1041
Client Purchase Order #: 1041-11
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SL - Select VOCs + 1,2,4 - TMB	P8082PCB1260 - PCBs (Aroclor 1260)	6010 - Metals (ASMS/Mn/Fe)	SM2320 B-11 - Alkalinity	SM4500NH 3 H-11 Lachat - Ammonia	300 - Chloride/Sulfate	6010 - Dissovled Iron (DISS FF)	353.2/SM4500 NO2B - Nitrate/Nitrite (XNO3O)	SM4500S2-F-11 - Total Sulfide	SM5310 - Total Organic Carbon	VRSK175DGMEE - Methane, Ethane, Ethene	LAB USE ONLY
43	S03M66D2-063020		6/30/20	13:05	MRS	GW	6	3		1		2				X	X	X									
44	S03M15-063020		↓	11:45	JRF	↓	↓	↓		↓		↓				X	X	X									
45	TB-063020		↓	13:55			2	2								X											

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other _____

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format _____
- [ ] Other _____
- [ ] *NJ Data of Known Quality Protocol Reporting*

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions: Select VOCs - 1,4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1,2-DCE; TCE; Vinyl Chloride

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 14:05	Received By: 1 Robert Saunders	Relinquished By: 2 Robert Saunders	Date Time: 6-30-20 1708	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # ☐ Intact ☐ Not intact	Preserved where applicable ☐	On Ice ☐ Cooler Temp. TP 3-2oc 3.1oc

http://www.sgs.com/en/terms-and-conditions.

Job Change Order: JD8742

Requested Date:	7/2/2020	**Received Date:**	6/24/2020
Account Name:	Rhea Engineers & Consultants, In	**Due Date:**	7/13/2020
Project Description:	RAOMAC-Mid-Atlantic Navy. Mechanicsburg, PA	**Deliverable:**	FULT1
C/O Initiated By:	KR **PM:** KR	**TAT (Days):**	14

==========

Sample #: JD8742-59

Dept:

TAT: 14

DISP-070120

Change:
Please move sample to A job

==========

Above Changes Per: Mike S. **Date/Time:** 7/2/2020 9:55:05 AM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

CHAIN OF CUSTODY

GW/EB/TB

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking #

Bottle Order Control # KR-061120-88

SGS Quote #

SGS Job # JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants

Street Address: 441 Mars Valencia Road

City: Valencia, State: PA, Zip: 16059

Project Contact: Brad McCalla, E-mail: brad.mccalla@rhea.us

Phone #: 724-443-4111, Fax #:

Sampler(s) Name(s): Mike Strock/Jim Sergeson, Phone #: 412-335-8196

Project Information

Project Name: NSA Mechanicsburg

Street:

City: State:

Project #: 1041

Client Purchase Order #: 1041-11

Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:

Street Address:

City: State: Zip:

Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SL - Select VOCs + 1,2,4 - TMB	P8082PCB1260 - PCBs (Aroclor 1260)	6010 - Metals (ASMS/Mn/Fe)	SM2320 B-11 - Alkalinity	SM4500NH 3 H-11 Lachat - Ammonia	300 - Chloride/Sulfate	6010 - Dissovled Iron (DISS FF)	353.2/SM4500 NO2B - Nitrate/Nitrite (XNO3O)	SM4500S2-F-11 - Total Sulfide	SM5310 - Total Organic Carbon	VRSK175DGMEE - Methane, Ethane, Ethene	LAB USE ONLY
46	EB-063020		6/30/20	14:30	MRS	GW	5	2		1		2				X	X	X									E98
47	S03M68D1-063020			15:45			6	3		1		2															A22
48	S03M68D2-063020			17:45																							V824
49	S03M69D1-063020			18:45	JF																						
50	S03M69D2-063020			17:05																							
51	S03M46-063020			15:00																							
52	S03M44-063020			13:50																							
53	DD-1-070120		7/1/20	9:25	JF																						
54	S03M67D1-070120			11:20	MRS																						
55	S03M67D2-070120			12:45	MRS																						
56	TB-070120			12:10			2	2								X											

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:

Initial ~~Assessment~~ 2A-PP

Label Verification

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary

NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Select VOCs - 1,4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1,2-DCE; TCE; Vinyl Chloride

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 7/1/20 14:10	Received By: 1	Relinquished By: 2	Date Time: 7-1-20 1640	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] intact [ ] Not intact	Preserved where applicable [ ]

On Ice [X] Cooler Temp: 3.2°C, 3.2°C

http://www.sgs.com/en/terms-and-conditions.

CHAIN OF CUSTODY

EXHIBIT B

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants
Street Address: 441 Mars Valencia Road
City: Valencia | State: PA | Zip: 16059
Project Contact: Brad McCalla | E-mail: brad.mccalla@rhea.us
Phone #: 724-443-4111 | Fax #:
Sampler(s) Name(s): Mike Stock/Jim [redacted] | Phone #: 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City: | State:
Project #: 1041
Client Purchase Order #: 1041-11
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City: | State: | Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SL - Select VOCs + 1,2,4 - TMB	P8082PCB1260 - PCBs (Aroclor 1260)	6010 - Metals (ASMS/Mn/Fe)	SM2320 B-11 - Alkalinity	SM4500NH 3 H-11 Lachat - Ammonia	300 - Chloride/Sulfate	6010 - Dissovled Iron (DISS FF)	353.2/SM4500 NO2B - Nitrate/Nitrite (XNO3O)	SM4500S2-F-11 - Total Sulfide	SM5310 - Total Organic Carbon	VRSK175DGMEE - Methane, Ethane, Ethene	LAB USE ONLY
57	DD-70-070120		7/1/20	12:40	JF	GW	6	3		1		2				X	X	X								
58	SS3M01-070120		7/1/20	11:30	JF	GW	6	3		1		2				X	X	X								

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Select VOCs - 1,4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1,2-DCE; TCE; Vinyl Chloride

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	[signature]	7/1/20 14:10	[signature]	[signature]	7-1-20 1640	[signature]
2						
3	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
4						
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Intact / Not intact	Preserved where applicable

On Ice: Y JP | Cooler Temp: 2.2°C, 3.2°C

http://www.sgs.com/en/terms-and-conditions.

SGS

GW

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking #:
Bottle Order Control #: KR-061520-187
SGS Quote #:
SGS Job #: JD8742

Client / Reporting Information

Company Name: Rhea Engineers & Consultants
Street Address: 441 Mars Valencia Road
City: Valencia, PA State: Zip: 16059
Project Contact: Brad McCalla E-mail: brad.mccalla@rhea.us
Phone #: 724-443-4111 Fax #:
Sampler(s) Name(s): Mike Stoehr Phone #: 412-335-8196

Project Information

Project Name: NSA Mechanicsburg
Street:
City: State:
Project #: 1041
Client Purchase Order #: 1041-11
Project Manager: Brad McCalla

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	AB8270TCLP	P8082PCB11	TCLPM	V8260TCLP	LCID37DODFL, XLCMSDW4 - PFAS Full List DOD 24	LAB USE ONLY
59	Disp-070120		7/1/20	13:20	MRS	GW	10					10				X	X	X	X	X	E75 C38
																					SUB

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:
Initial Assessment 3A-DP
Label Verification

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Analyze PCB sample for all PCBs

Open SDG

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Date Time:			Date Time:	
Relinquished by Sampler: 1 MRS	7/1/20 14:10	Received By: 1 Robert Schreibers	Relinquished By: 2 Robert Schreibers	7-1-20 1640	Received By: 2
Relinquished by Sampler: 3		Received By: 3	Relinquished By: 4		Received By: 4
Relinquished by: 5		Received By: 5	Custody Seal # ☐ Intact ☐ Not intact	Preserved where applicable ☐	On Ice DoTp Cooler Temp. 3.2°C

http://www.sgs.com/en/terms-and-conditions.

REPORT TO:

Name: Mike Stofer
Company: Rhea Engineers
Address: 441 Mars-Valencia Rd
Valencia, PA 16059
email: mike.stofer@rhea.us
Phone: 412-335-8196
Fax:

INVOICE TO: (For Invoices paid by a third party it is imperative that all information be provided)

Name: Brad McCalla
Company: Same
Address: Same
email: brad.mccalla@rhea.us
Phone: 724-443-4111
Fax:

microbialinsights
10515 Research Dr
Knoxville, TN 37932
865-573-8188
www.microbe.com

Project Manager: Brad McCalla
Project Name: NJA Mechanicsburg
Project No.: 1041

Purchase Order No.
Subcontract No.
MI Quote No.

Please Check One:
☑ More samples to follow
☐ No Additional Samples

Report Type: ☑ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (35%)

EDD type: ☑ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information						Analyses				CENSUS: Please select the target organism/gene																					
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	Total Number of Containers	PLFA	NGS	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, tce, vcr)	DHBt (Dehalobacter)	DHG (Dehalogenimonas)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Dentrifiers-nirS and nirK)	AMO (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Napthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
096RF1	S03M17-062420	6/24/20	10:05	GW	1					X	X																					
2	S03M18-062420	"	10:35	"	"					"	"																					
3	S03M54-062420	"	14:35	"	"					"	"																					
4	S03M64D1-062420	"	17:10	"	"					"	"																					
5	S03M64D10-062420	"	17:10	"	"					"	"																					

Relinquished by: MS Date 6/24/20 Received by: FEDEX AB # 8118 2750 1446 Date 6/24/20

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

6/25/2020

REPORT TO:

Name: Mike Stoehr
Company: Rhea Engineers
Address: 441 Mars Valencia Rd
Valencia, PA 16059

email: mike.stoehr@rhea.us
Phone: 412-335-8196
Fax:

INVOICE TO: (For Invoices paid by a third party it is imperative that all information be provided)

Name: Brad McCalla
Company: Jacobs
Address:

email: brad.mccalla@rhea.us
Phone: 724-443-4121
Fax:

microbialinsights
10515 Research Dr
Knoxville, TN 37932
865-573-8188
www.microbe.com

Project Manager: Brad McCalla
Project Name: NSA Mechanicsburg
Project No.: 1241

Purchase Order No.
Subcontract No.
MI Quote No.

Please Check One:
☐ More samples to follow
☑ No Additional Samples

Report Type: ☑ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (35%)

EDD type: ☑ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information						Analyses				CENSUS: Please select the target organism/gene																					
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	Total Number of Containers	PLFA	NGS	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, tce, vcr)	DHBt (Dehalobacter)	DHG (Dehalogenimonas)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Dentrifiers-nirS and nirK)	AMO (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Napthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
0960RF6	S03M50-062520	6/25/20	9:30	GW	1					X	X																				
7	S03M6303-062520		10:37	↓	↓					↓	↓																				
8	S03M41-062520		12:45																												
9	S03M48-062520		13:45																												
10	S03M49-062520		16:31	↓	↓					↓	↓																				

Relinquished by: Date 6/25/2020 Received by: FEDERAL EXPRESS AB # 8118 2250 1451 Date

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

6/26/2020

APPENDIX B

Historic Data

APPENDIX B-1

Well Construction Data and Historic Water Level Surveys

Appendix B-1
Well Construction Data and Historic Water Level Surveys
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Reference Elevation (ft, NGVD)	Depth Top Screen (ft)	Depth Bottom Screen (ft)	Sounded Depth (ft)	Historical Investigation		Early Investigations						Phase I Baseline Injection		Phase I Interim Injection Event		Phase I Final Injection Event	
					Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)
					2/10/1992		12/14/2001		1/2/2002		4/15/2002		1/13/2004		5/6/2004		7/8/2004	
DD-1	422.79	9.8	56.5	56.5														
DD-2	412.86	29.7	71	30.7							28	384.86	22.15	390.71	16.1	396.76	27.23	385.63
DD-2S	411.15	17	37	37														
DD-2D	412.48	108.5	130	130.2							27.36	385.12	21.62	390.86	14.6	397.88	26.74	385.74
DD-3	410.81	37	77	54.5														
DD-3S	410.41	30	50	50														
DD-3D	411.40	108.5	136	136														
DD-04	404.18	18.7	70.4	70.4														
DD-05	388.66	---	---	44.9														
DD-6D	411.93	108.5	135	135														
DD-7D	415.24	108.5	135	135														
S02M01	433.94	9.5	69.7	76														
S02M02	436.95	10.5	48.1	53														
S02M03	437.73	7	47.7	44														
S02M04	439.99	13	51.9	162.5														
S03M01	430.02	17	59.1	---	39.72	390.3	43.58	386.44	45.63	384.39	32.94	397.08						
S03M02	430.21	17	77.8	77.5	39.38	390.83	43.34	386.87	45.59	384.62	34.4	395.81						
S03M03	429.46	15	57.3	55.15	36.33	393.13	42.01	387.45	43.98	385.48	34.71	394.75	25.95	403.51	23.2	406.26	29.19	400.27
S03M04	434.69	22.5	57.5	57.2	36.65	398.04	40.91	393.78	41.13	393.56	33.55	401.14						
S03M05	430.6	88.5	110	---	39.5	391.1	44.36	386.24	45.92	384.68	33.69	396.91						
S03M06	429.56	108.5	130	132.25	38.23	391.33	44.22	385.34	44.5	385.06	35.15	394.41						
S03M07	429.85	83.5	105	106.8	36.45	393.4	42.19	387.66	44.11	385.74	35.5	394.35						
S03M08	433.85	87.5	109	109.6	36.77	397.08	43.3	390.55	45.74	388.11	32.75	401.1						
S03M09	424.77	88.5	110	---	33.73	391.04	37.41	387.36	40.33	384.44								
S03M10	421.85	88.5	110	---	31.4	390.45	35.13	386.72	37.81	384.04								
S03M11	423	74.5	94.5	---	32.98	390.02	36.94	386.06	39.3	383.7								
S03M12	431.76	88.5	110	112.15	33.3	398.46	40.73	391.03	41.86	389.9								
S03M13	428.34	209.5	249.5	>204			41.77	386.57	44.46	383.88	31.26	397.08						
S03M14	427.42	17	100	99.75			22.71	404.71	23.8	403.62	22.3	405.12						
S03M15	428.32	209.5	249.5	>204			42.37	385.95	43.76	384.56	35.25	393.07						
S03M16	427.31	15	100	148.6			37.74	389.57	40.44	386.87								
S03M17	427	22	110	105.3			31.65	395.35	35.46	391.54	26.52	400.48	21.8	405.2	18.66	408.34	22.85	404.15
S03M18	427.65	30.5	110	107.8			31.75	395.9	35.44	392.21	25.52	402.13	21.91	405.74	20.31	407.34	21.94	405.71
S03M19	433.65	19	60	60.87			41.66	391.99	43.76	389.89								
S03M20	427.67	15.5	100	100.65			11.34	416.33	13.7	413.97								
S03M21	427.09	7	100	103.05			25.13	401.96	34.43	392.66	23.9	403.19	12.69	414.4	7.71	419.38	11.9	415.19
S03M22	429.1	42	100	98.6			26.47	402.63	23.74	405.36								
S03M23	427.31	14	100	100.7									18.07	409.24	15.7	411.61	17.18	410.13
S03M24	427.29	19	100	97.9														
S03M25	427.17	12	100	89.8														
S03M26	426.79	19	100	68.7														
S03M27	426.31	15	100	70.35														
S03M28	426.71	15	100	100.3														
S03M29	427.01	19	100	21.55														
S03M30	426.88	12	100	94.63														
S03M31	427.12	21	100	83.55														
S03M32	426.99	25	100	93.65														
S03M33	427.12	13	100	71.63									19.14	407.98	19.15	407.97	20.57	406.55
S03M34	426.3	7	100	99.5														
S03M35	427.11	11	100	91.95														
S03M36	427.36	16.5	100	26.1									23.1	404.26	27	400.36	22.26	405.1
S03M37	427.48	12	100	14.12														
S03M38	427.27	6	100	81.05														
S03M39	429.75	11	100	102.95														

Appendix B-1
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Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Reference Elevation (ft, NGVD)	Depth Top Screen (ft)	Depth Bottom Screen (ft)	Sounded Depth (ft)	Historical Investigation		Early Investigations						Phase I Baseline Injection		Phase I Interim Injection Event		Phase I Final Injection Event	
					Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)
					2/10/1992		12/14/2001		1/2/2002		4/15/2002		1/13/2004		5/6/2004		7/8/2004	
S03M40	430.19	30	100	101.3														
S03M41	427.63	15	100	91.47														
S03M42	427.4	10	100	71.32														
S03M43	429.62	29	100	98.13									25.52	404.1	23.17	406.45	29.99	399.63
S03M44	431.53	15	100	98.65									27.76	403.77	29.14	402.39	31.75	399.78
S03M45	432.18	19	100	68.8									28.53	403.65	29.76	402.42	32.6	399.58
S03M46	431.14	12	100	103.6														
S03M47	430.89	13	100	100.25														
S03M48	431.05	13	100	99.35														
S03M49	430.01	16	100	88.65														
S03M50	430.07	23	100	100.65														
S03M51	429.78	19	100	99.25														
S03M52	430.01	25	100	93.5														
S03M53	429.39	26	100	60.6														
S03M54	429.44	45	100	92.95														
S03M55	428.58	16	100	65.7														
S03M56	427.23	13	100	100.45														
S03M57	427.31	13	100	100														
S03M58	427.45	15	100	93.68														
S03M59	429.15	15	100	19.75														
S03M60	430.71	10	100	98.4														
S03M61S	427.38	22	35.1	35.1														
S03M61D	427.23	105	118.5	118.5														
S03M62S	427.77	31	43.6	43.6														
S03M62D	427.77	105	118.5	118.5														
S03M63D1	429.72	200	250	240														
S03M63D2	430.16	250	270	268														
S03M63D3	430.19	300	358	353														
S03M64D1	427.35	165	185	180														
S03M64D2	427.44	200	220	215														
S03M64D3	427.40	310	330	325														
S03M65D	428.42	210	230	228														
S03M66D1	430.95	170	187	188														
S03M66D2	430.97	190	210	208.5														
S03M67D1	427.74	145	165	163.5														
S03M67D2	427.55	230	250	249														
S03M68D1	429.41	165	185	182														
S03M68D2	429.42	230	250	250														
S03M69D1	438.32	175	195	193														
S03M69D2	438.21	210	230	230														
S03M70	429.93			353.5														
S03M71	432.35			351.9														
S03M72	428.44			348.9														
S03M73D1	429.31			188.2														
S03M73D2	429.29			349.8														
S07M01	421.90	31	65.58	68														
S07M02	423.98	13	66.4	69														
S07M03	420.78	9	65.9	68														
S07M04	422.01	20	64.2	65.5														
S07M05	424.02	20	44.5	44.5														
S07M06	421.14	---	---	50														
S08M01	423.89	19	59	112.5														
S08M02	422.30	20	58.8	63														
S08M03	422.17	7	57	55.5														
S08M04	430.82	---	---	59.5														
BF-02	NA	14.4	26.4	---														
BF-03	NA	---	---	26														
BF-05	417.10	---	---	---														

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Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Reference Elevation (ft, NGVD)	Depth Top Screen (ft)	Depth Bottom Screen (ft)	Sounded Depth (ft)	Phase II Baseline Injection		Phase II Interim Injection Event		Phase II Final Injection Event		Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)
					Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)										
					8/17/2004		9/24/2004		11/12/2004		9/6/2005		6/20/2006		7/7/2008		5/18/2009		5/10-11/2010	
DD-1	422.79	9.8	56.5	56.5											16.32	406.47	17.69	405.10	16.20	406.59
DD-2	412.86	29.7	71	30.7	22.4	390.46	20.44	392.42	27.1	385.76	10.64	402.22	11.69	401.17	12.62	400.24	12.09	400.77	20.28	392.58
DD-2S	411.15	17	37	37											18.89	392.26	20.41	390.74	18.82	392.33
DD-2D	412.48	108.5	130	130.2	21.85	390.63	19.65	392.83	26.52	385.96	28.99	383.49	29.25	383.23	17.18	395.30	19.77	392.71	18.19	394.29
DD-3	410.81	37	77	54.5											24.51	386.30	28.54	382.27	27.15	383.66
DD-3S	410.41	30	50	50											24.00	386.41	28.20	382.21	26.71	383.70
DD-3D	411.40	108.5	136	136											31.35	380.05	27.17	384.23	24.97	386.43
DD-04	404.18	18.7	70.4	70.4											15.98	388.20	19.23	384.95	19.03	385.15
DD-05	388.66	---	---	44.9											17.01	371.65	16.71	371.95	Abandoned 8/09	
DD-6D	411.93	108.5	135	135											22.40	389.53	25.29	386.64	23.98	387.95
DD-7D	415.24	108.5	135	135											16.90	398.34	18.02	397.22	16.50	398.74
S02M01	433.94	9.5	69.7	76											24.58	409.36	23.58	410.36	Abandoned 8/09	
S02M02	436.95	10.5	48.1	53											31.46	405.49	25.10	411.85	20.32	416.63
S02M03	437.73	7	47.7	44											24.91	412.82	23.42	414.31	Abandoned 8/09	
S02M04	439.99	13	51.9	162.5											34.35	405.64	27.58	412.41	Abandoned 8/09	
S03M01	430.02	17	59.1	---							35.43	394.59	37.21	392.81	32.95	397.07	25.85	404.17	23.58	406.44
S03M02	430.21	17	77.8	77.5							32.98	397.23	37.45	392.76	33.60	396.61	26.07	404.14	23.82	406.39
S03M03	429.46	15	57.3	55.15	25.9	403.56	21.42	408.04	30.48	398.98	33.76	395.53	35.43	393.86	31.39	398.07	24.32	405.14	22.56	406.90
S03M04	434.69	22.5	57.5	57.2							35.51	399.18	37.68	397.01	30.31	404.38	26.12	408.57	22.09	412.60
S03M05	430.6	88.5	110	---							35.42	395.18	37.37	393.23	34.59	396.01	25.94	404.66	23.29	407.31
S03M06	429.56	108.5	130	132.25							35.00	394.56	36.73	392.83	33.62	395.94	25.28	404.28	23.29	406.27
S03M07	429.85	83.5	105	106.8							33.92	395.56	35.62	393.86	31.57	398.28	24.51	405.34	22.74	407.11
S03M08	433.85	87.5	109	109.6							34.88	398.97	36.95	396.90	29.59	404.26	25.33	408.52	21.26	412.59
S03M09	424.77	88.5	110	---							28.76	396.01	29.69	395.08	26.96	397.81	20.49	404.28	17.78	406.99
S03M10	421.85	88.5	110	---							27.30	394.55	29.15	392.70	24.58	397.27	17.65	404.20	14.98	406.87
S03M11	423	74.5	94.5	---							28.86	394.14	30.72	392.28	26.00	397.00	19.11	403.89	16.48	406.52
S03M12	431.76	88.5	110	112.15							31.33	400.43	33.72	398.04	28.41	403.35	22.26	409.50	Not Found	
S03M13	428.34	209.5	249.5	>204							30.79	397.55	35.87	392.47	31.57	396.77	24.42	403.92	21.50	406.84
S03M14	427.42	17	100	99.75							21.12	406.30	21.33	406.09	20.80	406.62	20.82	406.60	20.55	406.87
S03M15	428.32	209.5	249.5	>204							32.86	395.46	35.75	392.57	31.23	397.09	24.36	403.96	21.92	406.40
S03M16	427.31	15	100	148.6	22.7	404.61	19.22	408.09	26.44	400.87	30.55	396.76	32.26	395.05	27.47	399.84	20.22	407.09	19.45	407.86
S03M17	427	22	110	105.3	20.6	406.4	18.07	408.93	21.92	405.08	25.24	401.76	26.02	400.98	23.04	403.96	17.53	409.47	17.44	409.56
S03M18	427.65	30.5	110	107.8	21.64	406.01	18.75	408.9	22.21	405.44	25.68	401.97	26.62	401.03	23.43	404.22	18.02	409.63	17.92	409.73
S03M19	433.65	19	60	60.87							38.45	395.20	40.15	393.50	36.34	397.31	29.14	404.51	26.88	406.77
S03M20	427.67	15.5	100	100.65	12.75	414.92					13.08	414.59	13.41	414.26	12.14	415.53	12.67	415.00	12.78	414.89
S03M21	427.09	7	100	103.05							24.93	402.16	27.37	399.72	7.43	419.66	17.30	409.79	14.46	412.63
S03M22	429.1	42	100	98.6	18.91	410.19	15.4	413.7	22.72	406.38	26.27	402.83	26.34	402.76	18.99	410.11	20.65	408.45	17.18	411.92
S03M23	427.31	14	100	100.7							18.89	408.42	18.27	409.04	17.28	410.03	15.29	412.02	16.06	411.25
S03M24	427.29	19	100	97.9							26.05	401.24	27.43	399.86	25.71	401.58	18.61	408.68	18.32	408.97
S03M25	427.17	12	100	89.8							29.06	398.11	31.27	395.90	25.09	402.08	14.47	412.70	16.22	410.95
S03M26	426.79	19	100	68.7							21.11	405.68	21.65	405.14	19.43	407.36	14.03	412.76	15.85	410.94
S03M27	426.31	15	100	70.35			17.28	409.03	22.05	404.26	22.73	403.58	21.55	404.76	13.64	412.67	18.09	408.22	18.45	407.86
S03M28	426.71	15	100	100.3							23.51	403.20	24.83	401.88	19.33	407.38	16.12	410.59	15.38	411.33
S03M29	427.01	19	100	21.55							20.64	406.37	21.11	405.90	19.55	407.46	16.37	410.64	17.42	409.59
S03M30	426.88	12	100	94.63							19.98	406.90	13.28	413.60	12.23	414.65	13.57	413.31	17.03	409.85
S03M31	427.12	21	100	83.55							26.50	400.62	22.49	404.63	16.04	411.08	19.00	408.12	19.27	407.85
S03M32	426.99	25	100	93.65							23.90	403.09	24.49	402.50	21.27	405.72	17.45	409.54	17.30	409.69
S03M33	427.12	13	100	71.63							21.25	405.87	22.00	405.12	20.68	406.44	18.17	408.95	18.53	408.59
S03M34	426.3	7	100	99.5							23.50	402.80	22.65	403.65	12.18	414.12	18.43	407.87	18.56	407.74
S03M35	427.11	11	100	91.95							26.74	400.37	20.65	406.46	14.30	412.81	19.05	408.06	19.21	407.90
S03M36	427.36	16.5	100	26.1	22.06	405.3	17.53	409.83	22.4	404.96	22.60	404.76	22.47	404.89	14.32	413.04	15.03	412.33	17.30	410.06
S03M37	427.48	12	100	14.12					26.59	400.89	*	< 413.36	*	< 413.36	14.21	413.27	*	< 413.36	*	< 413.36
S03M38	427.27	6	100	81.05	23.12	404.15	19.5	407.77			28.65	398.62	29.15	398.12	27.79	399.48	21.49	405.78	19.81	407.46
S03M39	429.75	11	100	102.95	12.94	416.81	15.44	414.31	15.99	413.76	18.02	411.73	17.10	412.65	12.46	417.29	15.19	414.56	15.97	413.78

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Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Reference Elevation (ft, NGVD)	Depth Top Screen (ft)	Depth Bottom Screen (ft)	Sounded Depth (ft)	Phase II Baseline Injection		Phase II Interim Injection Event		Phase II Final Injection Event		Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)
					Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)										
					8/17/2004		9/24/2004		11/12/2004		9/6/2005		6/20/2006		7/7/2008		5/18/2009		5/10-11/2010	
S03M40	430.19	30	100	101.3							29.86	400.33	29.93	400.26	17.15	413.04	23.48	406.71	22.61	407.58
S03M41	427.63	15	100	91.47							31.56	396.07	33.10	394.53	28.13	399.50	22.19	405.44	20.49	407.14
S03M42	427.4	10	100	71.32							31.32	396.08	32.78	394.62	29.51	397.89	21.04	406.36	19.78	407.62
S03M43	429.62	29	100	98.13							29.81	399.81	30.52	399.10	28.64	400.98	24.47	405.15	22.78	406.84
S03M44	431.53	15	100	98.65	29.75	401.78	31.2	400.33	28.76	402.77	36.77	394.76	38.45	393.08	33.66	397.87	26.96	404.57	24.66	406.87
S03M45	432.18	19	100	68.8	28.82	403.36	30.23	401.95	29.59	402.59	37.50	394.68	39.23	392.95	35.64	396.54	27.90	404.28	25.44	406.74
S03M46	431.14	12	100	103.6	18.4	412.74	18.9	412.24	16.91	414.23	19.90	411.24	19.59	411.55	16.73	414.41	17.39	413.75	17.48	413.66
S03M47	430.89	13	100	100.25	19.45	411.44					22.05	408.84	22.38	408.51	21.62	409.27	15.70	415.19	14.10	416.79
S03M48	431.05	13	100	99.35							28.01	403.04	28.77	402.28	28.79	402.26	16.05	415.00	13.88	417.17
S03M49	430.01	16	100	88.65			12.81	417.2	17.27	412.74	22.38	407.63	22.83	407.18	21.41	408.60	14.61	415.40	13.02	416.99
S03M50	430.07	23	100	100.65	17.9	412.17					21.14	408.93	21.33	408.74	21.05	409.02	15.17	414.90	13.24	416.83
S03M51	429.78	19	100	99.25							22.65	407.13	23.22	406.56	21.96	407.82	14.19	415.59	12.58	417.20
S03M52	430.01	25	100	93.5							25.83	404.18	26.43	403.58	19.73	410.28	21.69	408.32	18.20	411.81
S03M53	429.39	26	100	60.6			12.86	416.53	15.32	414.07	24.34	405.05	25.28	404.11	19.95	409.44	14.00	415.39	12.38	417.01
S03M54	429.44	45	100	92.95	17.56	411.88	12.18	417.26	15.09	414.35	23.35	406.09	25.15	404.29	21.48	407.96	14.05	415.39	12.56	416.88
S03M55	428.58	16	100	65.7	19.4	409.18	15.1	413.48	22.47	406.11	25.12	403.46	25.78	402.80	17.89	410.69	20.27	408.31	16.78	411.80
S03M56	427.23	13	100	100.45							30.57	396.66	32.23	395.00	25.65	401.58	18.93	408.30	18.94	408.29
S03M57	427.31	13	100	100							19.29	408.02	19.14	408.17	18.11	409.20	13.92	413.39	15.11	412.20
S03M58	427.45	15	100	93.68	19.3	408.15	17.1	410.35	19.6	407.85	19.10	408.35	19.74	407.71	17.20	410.25	13.55	413.90	15.42	412.03
S03M59	429.15	15	100	19.75	26.95	402.2	23.2	405.95			*	< 409.40	Abandoned 4/25/06		Abandoned 4/25/06		Abandoned 4/25/06		Abandoned 4/25/06	
S03M60	430.71	10	100	98.4					31.76	398.95	35.51	395.20	37.22	393.49	32.58	398.13	25.97	404.74	23.89	406.82
S03M61S	427.38	22	35.1	35.1											26.90	400.48	18.81	408.57	16.85	410.53
S03M61D	427.23	105	118.5	118.5											30.73	396.50	22.30	404.93	19.39	407.84
S03M62S	427.77	31	43.6	43.6											26.20	401.57	20.51	407.26	17.05	410.72
S03M62D	427.77	105	118.5	118.5											26.89	400.88	20.51	407.26	16.98	410.79
S03M63D1	429.72	200	250	240																
S03M63D2	430.16	250	270	268																
S03M63D3	430.19	300	358	353																
S03M64D1	427.35	165	185	180																
S03M64D2	427.44	200	220	215																
S03M64D3	427.40	310	330	325																
S03M65D	428.42	210	230	228																
S03M66D1	430.95	170	187	188																
S03M66D2	430.97	190	210	208.5																
S03M67D1	427.74	145	165	163.5																
S03M67D2	427.55	230	250	249																
S03M68D1	429.41	165	185	182																
S03M68D2	429.42	230	250	250																
S03M69D1	438.32	175	195	193																
S03M69D2	438.21	210	230	230																
S03M70	429.93			353.5																
S03M71	432.35			351.9																
S03M72	428.44			348.9																
S03M73D1	429.31			188.2																
S03M73D2	429.29			349.8																
S07M01	421.90	31	65.58	68											23.15	398.75	26.94	394.96	21.55	400.35
S07M02	423.98	13	66.4	69											21.60	402.38	24.92	399.06	20.27	403.71
S07M03	420.78	9	65.9	68											26.19	394.59	18.29	402.49	15.44	405.34
S07M04	422.01	20	64.2	65.5											24.50	397.51	17.39	404.62	14.80	407.21
S07M05	424.02	20	44.5	44.5											28.60	395.42	21.18	402.84	18.51	405.51
S07M06	421.14	---	---	50											23.86	397.28	17.12	404.02	14.61	406.53
S08M01	423.89	19	59	112.5											27.22	396.67	19.64	404.25	16.96	406.93
S08M02	422.30	20	58.8	63											25.02	397.28	18.06	404.24	15.47	406.83
S08M03	422.17	7	57	55.5											25.09	397.08	18.28	403.89	15.68	406.49
S08M04	430.82	---	---	59.5											26.69	404.13	21.74	409.08	Abandoned 8/09	
BF-02	NA	14.4	26.4	---											22.01	NA	17.64	NA	16.02	NA
BF-03	NA	---	---	26											20.78	NA	15.69	NA	14.53	NA
BF-05	417.10	---	---	---											22.69	394.41	17.64	399.46	16.11	400.99

Appendix B-1
Well Construction Data and Historic Water Level Surveys
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Reference Elevation (ft, NGVD)	Depth Top Screen (ft)	Depth Bottom Screen (ft)	Sounded Depth (ft)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)
					5/2/2011		6/4/2012		5/6/2013		5/21/2014		5/11/2015		5/9/2016		12/4/2017		5/18/2018		5/6/2019	
DD-1	422.79	9.8	56.5	56.5	14.13	408.66	16.4	406.39	30.08	392.71	14.25	408.54	25.65	397.14	22.04	400.75	32.10	390.69	14.71	408.08	15.96	406.83
DD-2	412.86	29.7	71	30.7	8.83	404.03	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA
DD-2S	411.15	17	37	37	8.38	402.77	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA
DD-2D	412.48	108.5	130	130.2	7.32	405.16	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA
DD-3	410.81	37	77	54.5	18.58	392.23	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA
DD-3S	410.41	30	50	50	18.17	392.24	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA
DD-3D	411.40	108.5	136	136	15.97	395.43	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA
DD-04	404.18	18.7	70.4	70.4	16.54	387.64	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA
DD-05	388.66	---	---	44.9	Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09	
DD-6D	411.93	108.5	135	135	13.19	398.74	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA
DD-7D	415.24	108.5	135	135	7.81	407.43	16.54	398.7	23.71	391.53	10.08	405.16	23.38	391.86	21.75	393.49	27.00	388.24	11.94	403.30	14.29	400.95
S02M01	433.94	9.5	69.7	76	Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09	
S02M02	436.95	10.5	48.1	53	11.06	425.89	25.95	411	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S02M03	437.73	7	47.7	44	Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09	
S02M04	439.99	13	51.9	162.5	Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09	
S03M01	430.02	17	59.1	---	18.90	411.12	26.46	403.56	36.49	393.53	23.11	406.91	32.41	397.61	31.91	398.11	30.79	399.23	16.25	413.77	24.79	405.23
S03M02	430.21	17	77.8	77.5	19.10	411.11	26.74	403.47	36.94	393.27	23.18	407.03	32.81	397.4	32.33	397.88	37.92	392.29	23.87	406.34	22.3	407.91
S03M03	429.46	15	57.3	55.15	17.36	412.10	25.32	404.14	34.95	394.51	21.89	407.57	30.81	398.65	30.60	398.86	35.40	394.06	21.89	407.57	22.3	407.16
S03M04	434.69	22.5	57.5	57.2	14.32	420.37	26.84	407.85	NM	NM	22.31	412.38	31.11	403.58	31.79	402.90	30.48	404.21	21.21	413.48	23	411.69
S03M05	430.6	88.5	110	---	18.74	411.86	27.3	403.3	NM	NM	23.60	407.00	32.23	398.37	32.63	397.97	32.13	398.47	17.14	413.46	24.86	405.74
S03M06	429.56	108.5	130	132.25	18.84	410.72	28.24	401.32	NM	NM	23.24	406.32	30.33	399.23	33.50	396.06	35.20	394.36	26.51	403.05	24.01	405.55
S03M07	429.85	83.5	105	106.8	17.54	412.31	25.5	404.35	35.11	394.74	22.07	407.78	30.95	398.9	30.79	399.06	35.38	394.47	21.98	407.87	19.9	409.95
S03M08	433.85	87.5	109	109.6	13.62	420.23	26.16	407.69	NM	NM	21.57	412.28	30.41	403.44	31.06	402.79	34.56	399.29	21.81	412.04	22.3	411.55
S03M09	424.77	88.5	110	---	13.59	411.18	21.18	403.59	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S03M10	421.85	88.5	110	---	10.73	411.12	18.25	403.6	NM	NM	14.78	407.07	24.19	397.66	23.74	398.11	29.30	392.55	18.33	403.52	15.2	406.65
S03M11	423	74.5	94.5	---	12.28	410.72	19.57	403.43	NM	NM	16.04	406.96	25.68	397.32	25.95	397.05	30.84	392.16	NM	NM	16.56	406.44
S03M12	431.76	88.5	110	112.15	10.97	420.79	25.21	406.55	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S03M13	428.34	209.5	249.5	>204	17.19	411.15	24.92	403.42	33.5	394.84	21.45	406.89	30.49	397.85	30.33	398.01	36.07	392.27	18.45	409.89	22.3	406.04
S03M14	427.42	17	100	99.75	15.52	411.90	20.8	406.62	21.13	406.29	19.91	407.51	21.19	406.23	20.93	406.49	21.66	405.76	19.72	407.7	20.4	407.02
S03M15	428.32	209.5	249.5	>204	16.83	411.49	24.91	403.41	33.18	395.14	21.34	406.98	30.38	397.94	30.35	397.97	35.44	392.88	18.73	409.59	21.1	407.22
S03M16	427.31	15	100	148.6	14.71	412.60	21.52	405.79	28.88	398.43	18.03	409.28	27.35	399.96	17.10	410.21	31.28	396.03	14.71	412.6	15.72	411.59
S03M17	427	22	110	105.3	13.60	413.40	19.06	407.94	26.49	400.51	17.06	409.94	23.71	403.29	23.12	403.88	25.18	401.82	16.28	410.72	17	410
S03M18	427.65	30.5	110	107.8	14.02	413.63	19.55	408.1	26.98	400.67	17.17	410.48	24.15	403.50	23.90	403.75	25.52	402.13	17.06	410.59	17.59	410.06
S03M19	433.65	19	60	60.87	22.50	411.15	29.91	403.74	NM	NM	26.6	407.05	35.86	397.79	35.31	398.34	40.50	393.15	25.83	407.82	25.86	407.79
S03M20	427.67	15.5	100	100.65	8.84	418.83	12.38	415.29	10.1	417.57	0.92	426.75	3.58	424.09	1.50	426.17	3.93	423.74	0.89	426.78	0.28	427.39
S03M21	427.09	7	100	103.05	17.20	409.89	13.6	413.49	25.65	401.44	10.97	416.12	21.38	405.71	19.85	407.24	25.55	401.54	8.48	418.61	9.21	417.88
S03M22	429.1	42	100	98.6	12.20	416.90	21.44	407.66	26.43	402.67	16.95	412.15	25.60	403.50	25.51	403.59	26.81	402.29	17.82	411.28	17.61	411.49
S03M23	427.31	14	100	100.7	13.02	414.29	15.87	411.44	NM	NM	13.21	414.10	27.11	400.20	14.78	412.53	18.94	408.37	15.13	412.18	15.61	411.7
S03M24	427.29	19	100	97.9	13.80	413.49	23.16	404.13	NM	NM	17.98	409.31	22.04	405.25	22.14	405.15	22.91	404.38	18.21	409.08	16.59	410.7
S03M25	427.17	12	100	89.8	13.30	413.87	15.45	411.72	NM	NM	14.98	412.19	22.78	404.39	14.32	412.85	24.43	402.74	11.93	415.24	12.33	414.84
S03M26	426.79	19	100	68.7	12.34	414.45	15.15	411.64	NM	NM	14.38	412.41	18.56	408.23	13.74	413.05	19.95	406.84	11.12	415.67	11.57	415.22
S03M27	426.31	15	100	70.35	**	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA	Abandoned	NA
S03M28	426.71	15	100	100.3	12.25	414.46	15.66	411.05	NM	NM	14.38	412.33	19.54	407.17	19.18	407.53	21.06	405.65	15.52	411.19	14.5	412.21
S03M29	427.01	19	100	21.55	13.36	413.65	16.65	410.36	NM	NM	16.60	410.41	19.50	407.51	16.59	410.42	20.40	406.61	14.99	412.02	15.56	411.45
S03M30	426.88	12	100	94.63	12.94	413.94	12.62	414.26	NM	NM	12.22	414.66	18.94	407.94	18.38	408.50	19.91	406.97	12.86	414.02	13.15	413.73
S03M31	427.12	21	100	83.55	13.40	413.72	18.36	408.76	NM	NM	14.60	412.52	25.88	401.24	22.43	404.69	28.47	398.65	14.92	412.2	18.24	408.88
S03M32	426.99	25	100	93.65	13.20	413.79	19.01	407.98	NM	NM	17.17	409.82	21.42	405.57	21.02	405.97	21.84	405.15	16.77	410.22	17.41	409.58
S03M33	427.12	13	100	71.63	14.45	412.67	19.55	407.57	NM	NM	18.28	408.84	20.97	406.15	20.30	406.82	21.82	405.30	17.54	409.58	18.2	408.92
S03M34	426.3	7	100	99.5	12.29	414.01	18.45	407.85	NM	NM	12.29	414.01	23.93	402.37	21.50	404.80	25.78	400.52	14.42	411.88	17.35	408.95
S03M35	427.11	11	100	91.95	13.29	413.82	18.78	408.33	NM	NM	18.67	408.44	25.98	401.13	26.57	400.54	28.60	398.51	15.14	411.97	18.7	408.41
S03M36	427.36	16.5	100	26.1	13.15	414.21	15.07	412.29	NM	NM	14.00	413.36	22.38	404.98	15.32	412.04	22.72	404.64	13.22	414.14	12.5	414.86
S03M37	427.48	12	100	14.12	14.25	413.23	*	NA	NM	NM	*		*		*		*		*		*	
S03M38	427.27	6	100	81.05	14.95	412.32	22.14	405.13	NM	NM	19.48	407.79	26.93	400.34	28.62	398.65	29.00	398.27	18.34	408.93	20.11	407.16
S03M39	429.75	11	100	102.95	13.10	416.65	14.62	415.13	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Appendix B-1
Well Construction Data and Historic Water Level Surveys
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Reference Elevation (ft, NGVD)	Depth Top Screen (ft)	Depth Bottom Screen (ft)	Sounded Depth (ft)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)	Depth to Water (ft)	GW Elevation (ft, NGVD)
					5/2/2011		6/4/2012		5/6/2013		5/21/2014		5/11/2015		5/9/2016		12/4/2017		5/18/2018		5/6/2019	
S03M40	430.19	30	100	101.3	17.30	412.89	24.35	405.84	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S03M41	427.63	15	100	91.47	15.55	412.08	22.76	404.87	29.04	398.59	19.99	407.64	28.49	399.14	27.83	399.80	32.90	394.73	19.72	407.91	20.58	407.05
S03M42	427.4	10	100	71.32	14.87	412.53	22.26	405.14	NM	NM	19.34	408.06	28.13	399.27	27.75	399.65	32.51	394.89	18.84	408.56	19.27	408.13
S03M43	429.62	29	100	98.13	17.55	412.07	25.46	404.16	NM	NM	22.18	407.44	29.04	400.58	28.98	400.64	31.18	398.44	21.85	407.77	22.32	407.3
S03M44	431.53	15	100	98.65	19.42	412.11	27.58	403.95	37.21	394.32	24.06	407.47	33.34	398.19	33.03	398.50	38.05	393.48	21.46	410.07	24.32	407.21
S03M45	432.18	19	100	68.8	20.28	411.90	28.4	403.78	36.59	395.59	24.85	407.33	34.04	398.14	34.96	397.22	39.12	393.06	22.18	410	25.15	407.03
S03M46	431.14	12	100	103.6	12.02	419.12	17.14	414	19.06	412.08	16.98	414.16	18.84	412.30	17.12	414.02	19.67	411.47	16.83	414.31	16.87	414.27
S03M47	430.89	13	100	100.25	9.51	421.38	18.74	412.15	18.37	412.52	14.18	416.71	20.24	410.65	19.30	411.59	18.16	412.73	15.94	414.95	15.3	415.59
S03M48	431.05	13	100	99.35	9.53	421.52	19.48	411.57	24.65	406.4	13.82	417.23	16.82	414.23	31.68	399.37	23.39	407.66	16.25	414.8	15.56	415.49
S03M49	430.01	16	100	88.65	8.88	421.13	17.38	412.63	18.02	411.99	13.17	416.84	16.62	413.39	19.26	410.75	16.79	413.22	13.81	416.2	13.58	416.43
S03M50	430.07	23	100	100.65	8.89	421.18	17.25	412.82	17.23	412.84	12.35	417.72	16.65	413.42	17.39	412.68	18.31	411.76	14.51	415.56	14.5	415.57
S03M51	429.78	19	100	99.25	8.61	421.17	16.35	413.43	16.65	413.13	12.91	416.87	17.18	412.60	17.18	412.60	18.09	411.69	***		13.31	416.47
S03M52	430.01	25	100	93.5	10.19	419.82	22.43	407.58	26.19	403.82	17.97	412.04	25.95	404.06	25.37	404.64	26.55	403.46	18.78	411.23	18.66	411.35
S03M53	429.39	26	100	60.6	8.21	421.18	17.03	412.36	NM	NM	12.50	416.89	15.22	414.17	15.42	413.97	19.02	410.37	13.15	416.24	12.98	416.41
S03M54	429.44	45	100	92.95	8.31	421.13	16.3	413.14	15.99	413.45	12.50	416.94	15.19	414.25	15.71	413.73	17.13	412.31	13.03	416.41	12.89	416.55
S03M55	428.58	16	100	65.7	8.82	419.76	21.03	407.55	NM	NM	16.55	412.03	*		*		*		17.47	411.11	17.28	411.3
S03M56	427.23	13	100	100.45	13.60	413.63	21.03	406.2	NM	NM	17.33	409.90	27.42	399.81	22.59	404.64	36.75	390.48	14.89	412.34	15.2	412.03
S03M57	427.31	13	100	100	12.80	414.51	13.8	413.51	16.33	410.98	13.90	413.41	17.08	410.23	13.89	413.42	19.07	408.24	13.07	414.24	13.33	413.98
S03M58	427.45	15	100	93.68	12.42	415.03	13.34	414.11	NM	NM	13.42	414.03	17.53	409.92	13.13	414.32	17.74	409.71	12.45	415	12.75	414.7
S03M59	429.15	15	100	19.75	Abandoned 4/25/06		Abandoned 4/25/06		Abandoned 4/25/06		Abandoned 4/25/06		Abandoned 4/25/06		Abandoned 4/25/06		Abandoned 4/25/06		Abandoned 4/25/06		Abandoned 4/25/06	
S03M60	430.71	10	100	98.4	18.72	411.99	26.68	404.03	NM	NM	23.23	407.48	32.12	398.59	34.92	395.79	NM	NM	23.98	406.73	23.91	406.8
S03M61S	427.38	22	35.1	35.1	13.25	414.13	18.23	409.15	25.28	402.1	16.87	410.51	26.59	400.79	23.87	403.51	29.58	397.80	15.81	411.57	15.65	411.73
S03M61D	427.23	105	118.5	118.5	14.83	412.40	25.05	402.18	NM	NM	19.95	407.28	25.05	402.18	30.12	397.11	31.14	396.09	23.67	403.56	20.72	406.51
S03M62S	427.77	31	43.6	43.6	9.23	418.54	21.37	406.4	31.82	395.95	16.69	411.08	26.2	401.57	27.00	400.77	31.30	396.47	17.26	410.51	17.45	410.32
S03M62D	427.77	105	118.5	118.5	9.30	418.47	21.38	406.39	NM	NM	16.67	411.10	26.2	401.57	26.89	400.88	31.33	396.44	17.22	410.55	17.42	410.35
S03M63D1	429.72	200	250	240	12.38	417.34	21.45	408.27	22.05	407.67	15.77	413.95	20.19	409.53	18.89	410.83	21.62	408.10	15.42	414.3	15.53	414.19
S03M63D2	430.16	250	270	268	21.05	409.11	27.1	403.06	31.45	398.71	22.09	408.07	27.99	402.17	25.72	404.44	28.38	401.78	23.84	406.32	24.4	405.76
S03M63D3	430.19	300	358	353	34.87	395.32	28.44	401.75	36.07	394.12	22.88	407.31	29.39	400.80	25.29	404.90	36.51	393.68	18.06	412.13	16.46	413.73
S03M64D1	427.35	165	185	180	16.80	410.55	27.35	400	27.24	400.11	21.08	406.27	26.29	401.06	26.48	400.87	27.91	399.44	26.17	401.18	20.65	406.7
S03M64D2	427.44	200	220	215	20.85	406.59	28.8	398.64	29.85	397.59	21.29	406.15	29.98	397.46	29.01	398.43	29.42	398.02	26.54	400.9	21.32	406.12
S03M64D3	427.40	310	330	325	68.00	359.40	79.58	347.82	81.82	345.58	87.26	340.14	101.89	325.51	29.90	397.50	NM	NM	NM	NM	NM	NM
S03M65D	428.42	210	230	228	15.18	413.24	26.95	401.47	31.97	396.45	21.44	406.98	30.69	397.73	30.18	398.24	35.76	392.66	21.12	407.30	22.19	406.23
S03M66D1	430.95	170	187	188	11.46	419.49	17.45	413.5	18.97	411.98	17.15	413.80	18.08	412.87	18.02	412.93	18.74	412.21	17.24	413.71	17.81	413.14
S03M66D2	430.97	190	210	208.5	11.62	419.35	17.54	413.43	19.72	411.25	17.34	413.63	18.8	412.17	17.95	413.02	19.77	411.20	16.92	414.05	18	412.97
S03M67D1	427.74	145	165	163.5	9.68	418.06	21.5	406.24	31.81	395.93	16.88	410.86	26.39	401.35	27.10	400.64	31.55	396.19	17.63	410.11	17.75	409.99
S03M67D2	427.55	230	250	249	9.45	418.10	21.28	406.27	31.57	395.98	16.66	410.89	26.18	401.37	26.88	400.67	31.36	396.19	17.45	410.10	17.65	396.23
S03M68D1	429.41	165	185	182	9.51	419.90	21.92	407.49	31.32	398.09	17.25	412.16	26.09	403.32	26.82	402.59	30.42	398.99	17.56	411.85	18.05	411.36
S03M68D2	429.42	230	250	250	9.30	420.12	21.82	407.6	31.39	398.03	21.41	408.01	26.07	403.35	26.74	402.68	30.42	399.00	17.89	411.53	18.65	410.77
S03M69D1	438.32	175	195	193	21.29	417.03	32.18	406.14	41.81	396.51	27.72	410.60	37.49	400.83	37.19	401.13	41.90	396.42	26.61	411.71	28.21	410.11
S03M69D2	438.21	210	230	230	21.13	417.08	32.08	406.13	41.68	396.53	27.53	410.68	37.29	400.92	37.03	401.18	41.91	396.30	26.58	411.63	28.11	410.1
S03M70	429.93			353.5											28.52	401.41	30.30	399.63	17.23	412.70	13.79	416.14
S03M71	432.35			351.9											34.32	398.03	38.74	393.61	21.12	411.23	15.01	417.34
S03M72	428.44			348.9											27.63	400.81	25.51	402.93	23.94	404.50	20.8	407.64
S03M73D1	429.31			188.2											31.21	398.10	36.20	393.11	21.41	407.90	23.38	405.93
S03M73D2	429.29			349.8											33.19	396.10	36.09	393.20	23.67	405.62	22.99	406.3
S07M01	421.90	31	65.58	68	22.77	399.13	88.55	23.92	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S07M02	423.98	13	66.4	69	***	NA	69	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S07M03	420.78	9	65.9	68	11.30	409.48	66.81	27.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S07M04	422.01	20	64.2	65.5	10.34	411.67	63.3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S07M05	424.02	20	44.5	44.5	13.98	410.04	45.05	30.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S07M06	421.14	---	---	50	10.53	410.61	49.05	25.92	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S08M01	423.89	19	59	112.5	12.74	411.15	59.34	28.9	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S08M02	422.30	20	58.8	63	11.13	411.17	64.3	26.85	NM	NM	15.35	406.95	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S08M03	422.17	7	57	55.5	11.43	410.74	55.1	27.81	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
S08M04	430.82	---	---	59.5	Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09		Abandoned 8/09	
BF-02	NA	14.4	26.4	---	14.33	NA	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
BF-03	NA	---	---	26	10.36	NA	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
BF-05	417.10	---	---	---	8.33	408.77	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned

1. Water levels were computed based on depth to water values recorded on field sampling forms. 2. Null fields indicate that sampling and water level collection did not occur. 3. NM means Not Measured

* = Dry ** = To Be Abandoned *** = Under Equipment

APPENDIX B-2

Historic Groundwater Analytical Data

Appendix B-2
Historic Groundwater Analytical Data
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Date Sampled	Matrix	TCE	VC	CDCE	TDCE	Total DCE	CLBZ	AS	MN
	MCL or PRG (µg /L)		*5*	*2*	*70*	*100*	*---*	*100*	*10*	*314*
BF-3	07/11/2008	GW	1.1	1 U	1 U	1 U	1 U	0.42 J	6 U	0.7 J
BF-3	05/21/2009	GW	1.3	1 U	1 U	1 U	1 U	1 U	3 U	2.3 J
DD-1	04/02/2002	GW	1.5	2 U			1 U	1 U	10 U	4 B
DD-1	07/11/2008	GW	5.4	1 U	1.7	1 U	1.7	0.34 J	6 U	7.5
DD-1	05/20/2009	GW	7.6	1 U	2.1	1 U	2.1	1 U	1 J	5.7 U
DD-1	05/11/2010	GW	3.6 K	1 UJ	0.66 J	1 UJ	0.66 J	1 UJ	3 U	5.6 U
DD-1	05/03/2011	GW	1.3	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	3.7 U
DD-1	6/12/2012	GW	0.71 J	0.75 U			0.75 U	1.6	2 U	3.7 U
DD-1	5/15/2013	GW	4.1 J	0.33 UJ			0.33 UJ	0.33 UJ	Not Sampled	
DD-1	5/27/2014	GW	0.87 J	0.75 U			0.75 U	0.75 U	2 U	8.4
DD-1	5/19/2015	GW	1.2	0.75 U			0.75 U	0.75 U	1 J	8.9
DD-1	5/16/2016	GW	8.1	0.75 U			2.88	0.75 U	2 U	45
DD-1	12/15/2017	GW	0.89 J	1 U	1 U	1 U	1 U	1 U	1 U	15 U
DD-1	5/31/2018	GW	2.5	1 U	0.8 J	1 U	0.8 J	1 U	3 U	15 U
DD-1	5/16/2019	GW	0.79 J	1 U	1 U	1 U	1 U	1 U	3 U	15 U
DD-1	7/1/2020	GW	0.99 J	1 U	1 U	NS	NA	1 U	3 U	2.6 J
DD-2	04/04/2002	GW	1.6	2 U			1.3	1 U	10 U	2.3 B
DD-2	01/12/2004	GW	1.1	2 U			1.7	1 U	10 UL	64
DD-2	05/06/2004	GW	0.59 J	1 U	0.47 J	1 U	0.47 J	1 U	10 UL	22.2 J
DD-2	07/06/2004	GW	0.95 J	2 U			0.62 J	1 U	10 U	16.6
DD-2	08/11/2004	GW	1.5	2 U			1.6	1 U	10 U	135
DD-2	10/08/2004	GW	1.5	2 U			1.4	1 U	10 UL	12.2 B
DD-2	11/23/2004	GW	0.86 J	2 U			0.42 J	1 U	10 U	21.9
DD-2	07/10/2008	GW	0.76 J	1 U	0.33 J	1 U	0.33 J	0.53 J	6 U	27.5
DD-2	05/20/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	38
DD-2D	04/04/2002	GW	2.2	2 U			0.94 J	1 U	2.1 B	1.9 B
DD-2D	01/12/2004	GW	4.1	2 U			2.2	1 U	10 UL	2.9 B
DD-2D	05/06/2004	GW	2.2	1 U	1.4	1 U	1.4	1 U	10 UL	3.8 J
DD-2D	07/06/2004	GW	1.7	2 U			1.3	1 U	10 U	1.3 B
DD-2D	08/11/2004	GW	3.2	2 U			2.2	1 U	10 U	2.6 B
DD-2D	10/08/2004	GW	1	2 U			0.54 J	1 U	10 UL	0.69 B
DD-2D	11/23/2004	GW	0.42 J	2 U			1 U	1 U	10 U	2.2 B
DD-2D	07/09/2008	GW	2.2	1 U	1.4	1 U	1.4	1 U	6 U	3.1 J
DD-2D	05/26/2009	GW	2.2	1 U	1.2	1 U	1.2	1 U	3 U	5.7 U
DD-2S	04/04/2002	GW	1.4	2 U			0.74 J	1 U	10 U	4.5 B
DD-2S	07/10/2008	GW	0.72 J	1 U	0.51 J	1 U	0.51 J	0.89 J	6 U	97.3
DD-2S	05/20/2009	GW	1.1	1 U	0.56 J	1 U	0.56 J	1 U	3 U	31
DD-3	04/03/2002	GW	0.41 J	2 U			1 U	1 U	10 U	3.4 B
DD-3	07/10/2008	GW	1 U	1 U	1 U	1 U	1 U	1 U	6 U	20.9
DD-3	05/20/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	2 J	73
DD-3D	04/04/2002	GW	1 U	2 U			1 U	1 U	10 U	0.5 B
DD-3D	07/10/2008	GW	0.93 J	1 U	1 U	1 U	1 U	0.83 J	6 U	0.4 J
DD-3D	05/20/2009	GW	0.68 J	1 U	1 U	1 U	1 U	1 U	3 U	5.7 U
DD-3S	04/03/2002	GW	0.42 J	2 U			1 U	1 U	10 U	26.7
DD-3S	07/10/2008	GW	1 U	1 U	1 U	1 U	1 U	1 U	6 U	24.3
DD-3S	05/20/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	29
DD-4	04/02/2002	GW	1 U	2 U			1 U	1 U	10 U	4 B
DD-4	07/08/2008	GW	1 U	1 U	1 U	1 U	1 U	1 U	6 U	3.9 J
DD-4	05/22/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	34
DD-6D	04/03/2002	GW	1.7	2 U			1 U	1 U	10 U	8.8 B
DD-6D	07/10/2008	GW	1.4	1 U	1 U	1 U	1 U	0.25 J	6 U	11.1
DD-6D	05/20/2009	GW	1	1 U	1 U	1 U	1 U	1 U	3 U	8
DD-7D	04/05/2002	GW	7.5	2 U			0.64 J	1 U	10 U	0.59 B
DD-7D	07/09/2008	GW	11.8	1 U	0.93 J	1 U	0.93 J	1 U	6 U	4.1 J
DD-7D	05/26/2009	GW	11.9	1 U	0.88 J	1 U	0.88 J	1 U	3 U	11
DD-7D	05/12/2010	GW	12.4	1 U	0.87 J	1 U	0.87 J	1 U	3 U	4.5 J
DD-7D	05/03/2011	GW	10.1	0.75 U	0.84 J	0.75 U	0.84 J	0.75 U	2 U	17
DD-7D	6/12/2012	GW	5.3	0.75 U			0.75 U	0.75 U	2 U	3.7 U
DD-7D	5/14/2013	GW	9.1 J	0.33 U			0.69 J	0.33 U	Not Sampled	
DD-7D	5/27/2014	GW	7.1	0.75 U			0.73 J	0.75 U	2 U	7.6
DD-7D	5/12/2015	GW	5.3	0.75 U			0.66	0.75 U	2 U	16
DD-7D	5/16/2016	GW	6.8	0.75 U			0.79 J	0.75 U	2 U	3.4 J
DD-7D	12/15/2017	GW	6.2	1 U	0.67 J	1 U	0.67 J	1 U	1 U	15 U
DD-7D	5/30/2018	GW	3.1	1 U	0.61 J	1 U	0.61 J	1 U	3 U	15 U
DD-7D	5/16/2019	GW	2.1	1 U	1 U	1 U	1 U	1 U	3 U	15 U
DD-7D	7/1/2020	GW	2.5	1 U	1 U	NS	NA	1 U	3 U	15 U
S02M04	02/02/2001	GW	0.3 U	0.4 U			0.3 U	0.3 U	10 U	4.2 B
S02M04	07/15/2008	GW	1 U	1 U	1 U	1 U	1 U	1 U	6 U	1.3 J
S03M01	04/01/2002	GW	7.6	2 U			1 U	1 U	10 U	2.3 B
S03M01	07/10/2008	GW	10.7	1 U	2.3	1 U	2.3	1 U	6 U	614
S03M01	05/27/2009	GW	8.8	1 U	1.7	1 U	1.7	1 U	3 U	190
S03M01	05/11/2010	GW	1 UJ	1 UJ	4.7 K	1 UJ	4.7 K	1 UJ	3 U	780
S03M01	05/03/2011	GW	7.1	0.75 U	1.5	0.75 U	1.5	0.75 U	2 U	710
S03M01	6/8/2012	GW	0.81 J	0.75 U			0.75 U	0.75 U	2 U	3.7 U
S03M01	5/14/2013	GW	0.47 J	0.33 UJ			0.33 UJ	0.33 UJ	Not Sampled	
S03M01	5/23/2014	GW	0.77 J	0.75 U			0.57 J	0.75 U	2 U	39
S03M01	5/19/2015	GW	0.69 J	0.75 U			0.35	0.75 U	2 U	25
S03M01	5/18/2016	GW	0.80 J	0.75 U	0.43 J	0.75 U	0.43	0.75 U	2 U	13
S03M01	12/14/2017	GW	1 U	1 U	1 U	1 U	1 U	1 U	7.8	454
S03M01	5/30/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M01	5/16/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M01	7/1/2020	GW	1 U	1 U	1 U	NS	NA	1 U	3 U	2.4 J
S03M02	04/03/2002	GW	16	2 U			2.8	1 U	10 U	10.6 B
S03M02	07/09/2008	GW	6.4	1 U	1.6	1 U	1.6	1 U	6 U	2.2 J
S03M02	05/27/2009	GW	4.7	1 U	1	1 U	1	1 U	3 U	2.8 J
S03M02	05/11/2010	GW	9.4 J	1 UJ	1.8 J	1 UJ	1.8 J	1 UJ	3 U	5.6 U
S03M02	05/03/2011	GW	2.1	0.75 U	0.35 J	0.75 U	0.35 J	0.75 U	2 U	3.3 J
S03M02	6/12/2012	GW	2.1	0.75 U			0.92 J	0.75 U	2 U	3.7 U
S03M02	5/8/2013	GW	1.8	0.33 U			0.33 UJ	0.33 U	Not Sampled	
S03M02	5/28/2014	GW	0.75 U	0.75 U			0.75 U	0.75 U	2 U	3 J
S03M02	5/12/2015	GW	1.3	0.75 U			1.4	0.75 U	2 U	5.4 J
S03M02	5/18/2016	GW	1.3	0.75 U	1	0.75 U	1	0.75 U	2 U	2.2 J
S03M02	12/8/2017	GW	1.1	1 U	0.59 J	1 U	0.59 J	1 U	1 U	15 U
S03M02	5/22/2018	GW	0.41 J	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M02	5/10/2019	GW	0.54 J	1 U	1 U	1 U	1 U	1 U	3 U	6.8 J
S03M02	6/29/2020	GW	1 U	1 U	1 U	NS	NA	1 U	3 U	13.9 J

Appendix B-2
Historic Groundwater Analytical Data
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Date Sampled	Matrix	TCE	VC	CDCE	TDCE	Total DCE	CLBZ	AS	MN
	MCL or PRG (µg /L)		*5*	*2*	*70*	*100*	*---*	*100*	*10*	*314*
S03M03	04/08/2002	GW	4.5 J	450			440	1300	20.5	1020
S03M03	01/13/2004	GW	100 U	85 J			93 J	2000	38.1	740
S03M03	05/06/2004	GW	31 J	52	160	31 U	160	1000	40.2	2220 J
S03M03	07/08/2004	GW	2.8 J	20 U			66	300	23.2	2530
S03M03	08/17/2004	GW	11 J	91 J			300	1100	51.8	2940
S03M03	09/24/2004	GW	6.4	11			110	110	66	2730
S03M03	11/12/2004	GW	4 J	17 J			74	270	21.1	879
S03M03	04/19/2005	GW	4.2 J	5 U	4.3 J	5 U	4.3 J	5 U	2 UL	85
S03M03	09/09/2005	GW	50 U	93	230	50 U	230	1100	36.8	1090
S03M03	06/22/2006	GW	5.7 J	90	120	20 U	120	1500	27.9	704
S03M03	07/09/2008	GW	5.5	8.6	12.1	1.3	13.4	1230	7.3	448
S03M03	05/27/2009	GW	2.2	7.2	8.9	1.3	10.2	793	12	440
S03M03	05/13/2010	GW	5 U	3.6 J	9	5 U	9	1480	9	430
S03M03	6/11/2012	GW	3.6	0.43 J			3.3	45.5	2.7 J	140
S03M03	5/8/2013	GW	0.92 J	3.5			9.5 J	1060	Not Sampled	
S03M03	5/28/2014	GW	7.5 U	7.5 U			4.8 J	1310	13	320
S03M03	5/15/2015	GW	0.48 J	2.1			4.69	1400	13	310
S03M03	5/13/2016	GW	0.92 J	1.5	3.2	0.62	3.82	1280	11	250
S03M03	12/8/2017	GW	0.55 J	0.71 J	5.5	0.63 J	6.13	863	30.5	393
S03M03	5/22/2018	GW	2.5 U	2.5 U	4.3	2.5 U	4.3	1060	21	292
S03M03	5/10/2019	GW	5 U	5 U	5.3	5 U	5.3	824	19.2	257
S03M03	6/29/2020	GW	2 U	1.7 J	5.8	NS	NA	1020	11.8	231
S03M04	04/02/2002	GW	1	2 U			1.4	1 U	10 U	5.5 B
S03M04	07/08/2008	GW	1.4	1 U	0.56 J	1 U	0.56 J	1 U	6 U	22.6
S03M04	05/19/2009	GW	2.2	1 U	1 U	1 U	1 U	1 U	3 U	5.3 J
S03M04	05/14/2010	GW	1.9	1 U	1 U	1 U	1 U	1 U	3 U	4.2 J
S03M04	05/03/2011	GW	0.86 J	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	16
S03M05	04/01/2002	GW	1.3	2 U			1 U	1 U	10 U	0.28 B
S03M05	07/10/2008	GW	2.9	1 U	1 U	1 U	1 U	1 U	6 U	2.9 J
S03M05	05/27/2009	GW	2.9	1 U	1 U	1 U	1 U	1 U	3 U	1.9 J
S03M06	04/03/2002	GW	1 U	2 U			1 U	1 U	10 U	1.7 B
S03M06	07/09/2008	GW	1 U	1 U	1 U	1 U	1 U	1 U	6 U	0.9 J
S03M06	05/27/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	1.4 J	2.3 J
S03M07	04/05/2002	GW	50 U	950			1300	740	16.9	147
S03M07	07/09/2008	GW	0.61 J	6.3	5.2	2.2	7.4	1300	23.7	522
S03M07	05/27/2009	GW	1 U	2.4	1.8	1.7	3.5	2680	32	480
S03M07	05/13/2010	GW	1 U	4.8	3.5	1.2	4.7	1800	28	510
S03M07	05/03/2011	GW	0.75 UJ	1.6 J	1 J	1.4 J	2.4 J	2300 J	28	400
S03M07	6/11/2012	GW	0.75 J	2.9			4.4	0.75 UJ	21	280
S03M07	5/8/2013	GW	0.43 J	3.2			6.4 J	1050	Not Sampled	
S03M07	5/28/2014	GW	3.8 U	3.8 U			3.8 U	1620 J	24	280
S03M07	5/15/2015	GW	0.4 J	1.3			2.6	1280	20	290
S03M07	5/13/2016	GW	0.75 U	0.8 J	2	0.93 J	2.93	1850	19	230
S03M07	12/8/2017	GW	5 U	5 U	5 U	5 U	5 U	986	28.3	255
S03M07	5/22/2018	GW	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	999	19.1	209
S03M07	5/10/2019	GW	5 U	5 U	5 U	5 U	5 U	1080	23.8	187
S03M07	6/29/2020	GW	2 U	2 U	2 U	NS	NA	961	19.8	192
S03M08	04/02/2002	GW	1 U	2 U			1 U	1 U	10 U	65
S03M08	07/08/2008	GW	1 U	1 U	1 U	1 U	1 U	1 U	6 U	77.6
S03M08	05/19/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	3.6 J
S03M10	05/13/2010	GW	1 U	1 U	1 U	1 U	1 U	1 U	4.9	20
S03M10	05/03/2011	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	3.6	16
S03M13	04/03/2002	GW	1.2	2 U			1.3	1 U	10 U	8.5 B
S03M13	07/15/2008	GW	0.58 J	1 U	0.84 J	1 U	0.84 J	1 U	6 U	3.7 J
S03M13	05/26/2009	GW	1 U	1 U	0.51 J	1 U	0.51 J	1 U	1.9 J	5 J
S03M13	05/11/2010	GW	1 UJ	1 UJ	0.42 J	1 UJ	0.42 J	1 UJ	1.8 J	4.9 J
S03M13	05/05/2011	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	1.5 J	4.2 J
S03M13	6/11/2012	GW	0.75 U	0.75 U			0.42 J	0.75 U	1.4 J	5.9
S03M13	5/15/2013	GW	0.33 U	0.33 U			0.33 U	0.33 U	Not Sampled	
S03M13	5/30/2014	GW	0.75 UJ	0.75 UJ			0.75 UJ	0.75 UJ	1.6 J	5.5 J
S03M13	5/13/2015	GW	0.75 U	0.75 U			0.75 U	0.75 U	1.3 J	7.4
S03M13	5/17/2016	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	1.4 J	5.8
S03M13	12/13/2017	GW	1 U	1 U	1 U	1 U	1 U	1 U	6.5	15 U
S03M13	6/1/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M13	5/14/2019	GW	1 U	1 U	0.57 J	1 U	0.57 J	1 U	7.7	6.9 J
S03M13	6/30/2020	GW	1 U	1 U	0.55 J	NS	NA	1 U	7.1	6.9 J
S03M14	07/12/2001	GW	2	1	2	1 U	2	48	51	187
S03M14	04/04/2002	GW	2.5 J	6 U			2.6 J	110	90.8	216
S03M14	07/08/2008	GW	1.5	0.87 J	2.8	0.45 J	3.25	13.5	47.4	217
S03M14	05/19/2009	GW	7.3	1.9	10.6	0.87 J	11.47	67.3	21	280
S03M14	05/14/2010	GW	4.6	1.6	6.2	1	7.2	111	26	270
S03M14	05/04/2011	GW	2.8	1.6	8.2	1.9 J	10.1	95	18	190
S03M14	6/11/2012	GW	1.4	1			4.3	0.75 U	34	210
S03M14	5/9/2013	GW	0.33 U	2.3 J			9.5 J	53.9	Not Sampled	
S03M14	6/3/2014	GW	0.95 J	1.1			5.4 J	41.5	26	150
S03M14	5/15/2015	GW	375 U	0.75 U			0.92	4.5	25	120
S03M14	5/13/2016	GW	0.66 J	0.44 J	1.3	0.41 J	1.71	22	19	120
S03M14	12/8/2017	GW	0.28 J	1.1	3	1.2	4.2	51.4	54	484
S03M14	5/23/2018	GW	1 U	1 U	1.7	0.72 J	2.42	16.8	50.9	296
S03M14	5/7/2019	GW	1 U	1.2	3.9	1.3	5.2	57	63	317
S03M14	6/24/2020	GW	1 U	1 U	0.72 J	NS	NA	1.6	20.2	123
S03M15	04/04/2002	GW	10 U	160			340	35	14.9	135
S03M15	07/15/2008	GW	1 U	1.9	0.71 J	3.7	4.41	22	9.9	104
S03M15	05/27/2009	GW	1 U	62.5	52.3	6.5	58.8	24.6	14	51
S03M15	05/11/2010	GW	1 UJ	7 J	3 J	4.4 J	7.4 J	22.1 J	13	110
S03M15	05/05/2011	GW	1.2	252	323	18.8	341.8	101	17	90
S03M15	6/11/2012	GW	0.75 U	2.2			8.7	12.8	8.6	90
S03M15	5/15/2013	GW	0.33 U	8.3			20.4	17.6	Not Sampled	
S03M15	5/30/2014	GW	0.75 UJ	161 J			303 J	60.4 J	16	87
S03M15	5/13/2015	GW	0.41 J	192			271.7	48.5	16	100
S03M15	5/17/2016	GW	0.75 U	178	122	10.3	132.3	43.8	15	75
S03M15	12/7/2017	GW	1 U	1.1	1.2	0.62 J	1.82	78.6	18.9	57.5
S03M15	6/1/2018	GW	1 U	2.5	1.4	0.52 J	1.92	71.4	17.3	54.3
S03M15	5/16/2019	GW	1 U	1.6	1.1	1 U	1.1	51.8	16.8	39.1
S03M15	6/30/2020	GW	1 U	1.7	1	NS	NA	28	12.3	28.5

Appendix B-2
Historic Groundwater Analytical Data
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Well ID	Date Sampled	Matrix	TCE	VC	CDCE	TDCE	Total DCE	CLBZ	AS	MN
	MCL or PRG (µg /L)		*5*	*2*	*70*	*100*	*---*	*100*	*10*	*314*
S03M16	07/16/2001	GW	3	11	7	1 U	7	0.8 J	17.2 B	75.2
S03M16	08/13/2004	GW	1	5.3			5.3	1.1	21.5	466
S03M16	09/23/2004	GW	2.3	1.3 J			2.6	0.4 J	10 U	1400
S03M16	11/11/2004	GW	3.2	3.4			5.9	0.42 J	38.9	916
S03M16	04/20/2005	GW	4.3 J	4.2 J	9.8	5 U	9.8	5 U	2 UL	755
S03M16	09/07/2005	GW	19	5	72	5 U	72	5.5	4.9	408
S03M16	06/20/2006	GW	20	12	130	1 U	130	3.5	10.7 K	237
S03M16	07/08/2008	GW	3.5	9.6	31.5	0.24 J	31.74	3	2.2 J	284
S03M16	05/19/2009	GW	2.4	2.7	8.3	1 U	8.3	1.3	7.2	210
S03M16	05/12/2010	GW	1.5	2.7	6.7	1 U	6.7	2.1	8.1	190
S03M16	05/04/2011	GW	1	1.8	3.7	0.75 U	3.7	1.2	6.1	180
S03M16	6/11/2012	GW	0.82 J	6.4			10	3.4	4.2	190
S03M16	5/10/2013	GW	0.8 J	5.1			7.02 J	0.33 U	Not Sampled	
S03M16	6/2/2014	GW	0.87 J	1.8 J			3.94 J	0.48 J	4.9	130
S03M16	5/15/2015	GW	0.64 J	2.8			5.46	0.98 J	8.1	160
S03M16	5/12/2016	GW	1.7	1.8	4.4	0.75 U	4.4	0.57 J	3	180
S03M16	12/13/2017	GW	1 U	2	4.6	1 U	4.6	0.92 J	6.1	411
S03M16	5/23/2018	GW	4.4	1 U	3.7	1 U	3.7	1 U	3 U	182
S03M16	5/9/2019	GW	2.1	1 U	2.6	1 U	2.6	1 U	3 U	134
S03M16	6/23/2020	GW	1.2	1 U	2.1	NS	NA	1 U	2.1 J	297
S03M17	06/29/2001	GW	810	140	380	6	386	430	9.2 B	10.7 B
S03M17	04/08/2002	GW	41 J	680			3800	2600	18.4	102
S03M17	01/13/2004	GW	40 U	60 J			33 J	670	1.8 L	204
S03M17	05/07/2004	GW	13	5.9 J	29	8.5 U	29	280	10 U	1320 J
S03M17	07/07/2004	GW	49	3.5 J			160	110	5.2 L	1110
S03M17	08/16/2004	GW	92	40 U			310	240	3.8 B	1290
S03M17	09/23/2004	GW	180	29 J			550	690	10 U	4180
S03M17	11/11/2004	GW	250	70 U			410	1200	2.6 B	7180
S03M17	04/20/2005	GW	300	35 J	440	50 U	440	1000	25.3	1010
S03M17	09/06/2005	GW	48 J	100 J	1500	120 U	1500	2700	25.8	799
S03M17	06/20/2006	GW	9.6	130	230	8.7	238.7	910	21.6	437
S03M17	07/09/2008	GW	7.4	38.1	145	8.4	153.4	1560	14.4	386
S03M17	05/26/2009	GW	6	19.3	157	4	161	608	7.9	230
S03M17	05/12/2010	GW	5 U	43.4	226	5.2	231.2	296	8	200
S03M17	05/04/2011	GW	15.6	13	49.1	2 J	51.1	257	10	510
S03M17	6/8/2012	GW	1.7	16.6			86.4	378	3.5	180
S03M17	5/10/2013	GW	1.7 U	172			261.1	1040	Not Sampled	
S03M17	6/2/2014	GW	18.8 U	268			114.8 J	1490	6.2	220
S03M17	5/15/2015	GW	1.6	130			241.3	744	7.1	210
S03M17	5/12/2016	GW	1.9	121	199	8.2	207.2	872	5.9	150
S03M17	12/12/2017	GW	5 U	115	54.3	7.5	61.8	1580	8.6	244
S03M17	5/24/2018	GW	5 U	5 U	5 U	4.4 J	4.4 J	932	8.6	785
S03M17	5/8/2019	GW	5 U	6.2	5 U	3.6 J	3.6 J	899	33.2	652
S03M17	6/24/2020	GW	4 U	49	43.7	NS	NA	935	4.5	684
S03M18	07/06/2001	GW	5000	860	2600	100 U	2600	8300	19.9	322
S03M18	04/05/2002	GW	300 U	310 J			970	8000	32.4	309
S03M18	01/13/2004	GW	250 U	340 J			500	4700	14	369
S03M18	05/07/2004	GW	900	92	840	9.9 J	849.9	1200	11	2560 J
S03M18	07/07/2004	GW	160	200 U			230	2000	27.5	3830
S03M18	08/16/2004	GW	220 J	500 U			580	4800	61.1	2220
S03M18	09/24/2004	GW	110	50 U			110	540	3.1 B	3620
S03M18	11/12/2004	GW	76	100 U			100	1100	4.6 K	3920
S03M18	04/20/2005	GW	520	250 U	430	250 U	430	4400	26.4	3660
S03M18	09/06/2005	GW	1100	190 J	850	250 U	850	5400	19.5	1700
S03M18	06/23/2006	GW	1600	300	1000	50 U	1000	5100	24.1	1120
S03M18	07/09/2008	GW	324	188	934	13.9	947.9	3610	16.1	1100
S03M18	05/27/2009	GW	77.3	48.6	398	9.4	407.4	5280	14	1800
S03M18	05/12/2010	GW	58.3	26.4	630	11.7	641.7	4000 J	14	1100
S03M18	05/04/2011	GW	5.1	75.3	120	6.1 J	126.1	2810	16	1000
S03M18	6/8/2012	GW	38.8	25.4			388 UL	3770	13	630
S03M18	5/10/2013	GW	6.6	39.2			256	1510	Not Sampled	
S03M18	5/28/2014	GW	53.2	20.1			413 J	3310	17	800
S03M18	5/19/2015	GW	16.4	31.7			421.8	3410	20	630
S03M18	5/10/2016	GW	7.6 J	3.7 J	44.5	7.5 U	44.5	1170	13	190
S03M18	12/7/2017	GW	23.8	24.2	227	3.4	230.4	3030	47.8	274
S03M18	5/24/2018	GW	20 U	24.6	120	20 U	120	2530	64.8	213
S03M18	5/8/2019	GW	13.6 J	26.4	198	20 U	198	2500	47.9	354
S03M18	6/24/2020	GW	50.3	11.5	224	NS	NA	1450	41.2	194
S03M19	07/10/2001	GW	1 U	1 U	1 U	1 U	1 U	1 U	5.8 B	40.7
S03M19	07/08/2008	GW	1 U	1 U	1 U	1 U	1 U	1 U	6 U	8.8
S03M19	05/19/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	4.1 J
S03M19	05/13/2010	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	12
S03M20	07/05/2001	GW	0.4 J	1 U	1 U	1 U	1 U	1 U	10 U	27.9
S03M20	08/16/2004	GW	0.43 J	2 U			1 U	1 U	10 U	41.1 B
S03M20	04/21/2005	GW	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	22.2	36.7
S03M20	09/07/2005	GW	5 U	5 U	5 U	5 U	5 U	5 U	25.3	26.8
S03M20	06/22/2006	GW	0.32 J	2 U	1 U	1 U	1 U	1 U	30	13.2
S03M20	07/08/2008	GW	0.55 J	1 U	1 U	1 U	1 U	1 U	1.1 J	7.8
S03M20	05/19/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	3.3	12
S03M20	05/12/2010	GW	1 U	1 U	1 U	1 U	1 U	1 U	1.2 J	2.7 J
S03M20	05/02/2011	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	30
S03M20	6/6/2012	GW	0.75 U	0.75 U			0.75 U	0.75 U	1.2 J	7.2
S03M20	5/8/2013	GW	0.33 U	0.33 U			0.33 U	0.33 U	Not Sampled	
S03M20	6/3/2014	GW	0.75 U	0.75 U			0.75 UJ	0.75 U	2 U	82
S03M20	5/15/2015	GW	0.75 U	0.75 U			0.75 U	0.75 U	2.1 J	230
S03M20	5/13/2016	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	120
S03M20	12/5/2017	GW	1 U	1 U	1 U	1 U	1 U	1 U	1.5	68.7
S03M20	5/25/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M20	5/8/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	50.5
S03M20	6/24/2020	GW	1 U	1 U	1 U	NS	NA	1 U	3 U	55.9
S03M21	07/11/2001	GW	2400	50 U	50 U	50 U	50 U	31 J	10 U	7.1 B
S03M21	04/05/2002	GW	190	10 U			5 U	5 U	2.3 B	2 B
S03M21	01/12/2004	GW	2.1	2 U			1 U	1 U	10 UL	2.1 B
S03M21	05/06/2004	GW	3.6	1 U	1 U	1 U	1 U	1 U	10 UL	890 J
S03M21	07/07/2004	GW	1.4 J	10 U			5 U	5 U	4.2 L	2340
S03M21	07/11/2008	GW	4.1	1 U	1 U	1 U	1 U	0.29 J	6 U	1.2 J
S03M21	05/26/2009	GW	7.6	1 U	1 U	1 U	1 U	1 U	3 U	5.7 U
S03M21	05/13/2010	GW	1.3	1 U	1 U	1 U	1 U	1 U	3 U	5.6 U
S03M21	05/04/2011	GW	0.7 J	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	3.7 U
S03M21	6/12/2012	GW	2.9	0.75 U			0.75 U	0.75 U	2 U	1.2 J
S03M21	5/10/2013	GW	0.99 J	0.33 U			0.33 U	0.33 U	Not Sampled	

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Well ID	Date Sampled	Matrix	TCE	VC	CDCE	TDCE	Total DCE	CLBZ	AS	MN
	MCL or PRG (µg /L)		*5*	*2*	*70*	*100*	*---*	*100*	*10*	*314*
S03M21	5/28/2014	GW	0.75 U	0.75 U			0.75 U	0.75 U	2 U	15
S03M21	5/15/2015	GW	0.66 J	0.75 U			0.75 U	0.75 U	2 U	13
S03M21	5/12/2016	GW	0.85 J	0.75 U	0.59 J	0.75 U	0.59	0.75 U	2 U	5.8
S03M21	12/14/2017	GW	0.42 J	1 U	1 U	1 U	1 U	1 U	1.1	47.1
S03M21	5/25/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M21	5/14/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	1.4 J
S03M21	6/29/2020	GW	1 U	1 U	1 U	NS	NA	1 U	3 U	21.3
S03M22	07/06/2001	GW	2	95	340	6	346	3 B	7.5 B	915
S03M22	08/13/2004	GW	15 J	220			910	14 J	10 U	971
S03M22	09/22/2004	GW	3	5 U			85	1.2 J	2.5 B	1710
S03M22	11/11/2004	GW	6.3	12			150	5 U	10 U	1520
S03M22	04/19/2005	GW	19	8 J	300	5.3 J	305.3	10 U	2 UL	665
S03M22	09/07/2005	GW	3.7 J	5 U	32	5 U	32	5 U	2.1 U	54
S03M22	07/08/2008	GW	3.7	0.35 J	12.4	0.43 J	12.83	1 U	6 U	22.6
S03M22	05/19/2009	GW	1.7	1 U	14.1	1 U	14.1	1 U	3 U	130
S03M22	05/14/2010	GW	2.6	1 U	11	1 U	11	1 U	3 U	31
S03M22	05/05/2011	GW	2.6	0.75 U	4	0.75 U	4	0.75 U	2 U	8.5
S03M22	6/6/2012	GW	3.6	0.75 U			9.32	0.75 U	2 U	1.5
S03M22	5/8/2013	GW	1.7	0.33 U			17.69 J	0.33 U	Not Sampled	
S03M22	5/27/2014	GW	1	0.75 U			6.4	0.75 U	2 U	91
S03M22	5/14/2015	GW	1.6	0.75 U			13.81	0.75 U	1.2 J	160
S03M22	5/11/2016	GW	1.2	0.75 U	4.6	0.75 U	4.6	0.75 U	2 U	24
S03M22	12/5/2017	GW	0.98 J	1 U	2.3	1 U	2.3	1 U	1.7	135
S03M22	5/21/2018	GW	0.75 J	1 U	2.9	1 U	2.9	1 U	3 U	72.3
S03M22	5/7/2019	GW	1 U	1 U	2.2	1 U	2.2	1 U	1.3 J	121
S03M22	6/25/2020	GW	1.2	1 U	4.7	NS	NA	1 U	3 U	52
S03M41	06/20/2006	GW	4500	230	2100	50 U	2100	3200	25.8	413
S03M41	07/09/2008	GW	1400	194	2280	26.6	2306.6	1490	10.8	377
S03M41	05/26/2009	GW	984	228	14.8 J	39.5	54.3	4330	15	350
S03M41	05/13/2010	GW	38.8	13.5 J	205	25 U	205	635	3.2	490
S03M41	05/03/2011	GW	159	50.2	262	8.9 J	270.9	330	2.7 J	430
S03M41	6/11/2012	GW	512	97			1034.4	232	4.3	430
S03M41	5/15/2013	GW	1330 J	98.7 J			3009.9 J	586 J	Not Sampled	
S03M41	5/28/2014	GW	287	69			700.9	684	8.3	340
S03M41	5/20/2015	GW	482	70.2			822.3	775	7	320
S03M41	5/10/2016	GW	65.4	34.9	432	5.6 J	437.6	909	12	210
S03M41	12/7/2017	GW	22.1	341	299	5.8	304.8	1170	17.2	209
S03M41	5/24/2018	GW	24.3	413	527	7.2	534.2	976	14.6	220
S03M41	5/8/2019	GW	4.6	238	144	4.7	148.7	504	5.5	238
S03M41	6/25/2020	GW	1.7 J	1430	2220	NS	NA	612	8.1	215
S03M44	01/12/2004	GW	12	0.58 J			22	1 U	2 L	56.2
S03M44	04/02/2004	GW	22	1.6 J	42	2 U	42	0.83 J	10 U	35.5 J
S03M44	06/01/2004	GW	15	1.7 J			40	0.67 J	10 U	19.5
S03M44	08/12/2004	GW	11	2 U			12	1 U	10 U	8.5 B
S03M44	09/03/2004	GW	18	2 U			30	1 U	10 UL	3.7 B
S03M44	10/21/2004	GW	42	2.1 J			140	1.8 J	10 U	40.4
S03M44	04/20/2005	GW	53	5 U	150	5 U	150	5 U	2 UL	5.8
S03M44	09/08/2005	GW	53	31	280	12 U	280	25	2.1 U	549
S03M44	06/23/2006	GW	81	8.8	240	1.8	241.8	17	3 U	84.6
S03M44	07/09/2008	GW	28.9	13.5	151	2.3	153.3	15.4	6 U	159
S03M44	05/21/2009	GW	28	2.6	90.5	0.97 J	91.47	5	3 U	51
S03M44	05/11/2010	GW	16.2 J	1 UJ	39.2 J	1 UJ	39.2 J	1 UJ	3 U	35
S03M44	05/04/2011	GW	14.5	0.75 U	20.2	0.75 U	20.2	0.34 J	2 U	26
S03M44	6/8/2012	GW	8.3	0.64 J			57	0.75 U	2 U	190
S03M44	5/9/2013	GW	32.7	18.6			189.8	58.6	Not Sampled	
S03M44	5/30/2014	GW	1.7 J	0.75 UJ			8.3 J	0.75 UJ	1.6 J	320
S03M44	5/13/2015	GW	10.2	2.2			77.7	12.1	1.1 J	430
S03M44	5/12/2016	GW	10.0	2.00	68	1.6	69.6	0.75 U	2 U	59
S03M44	12/7/2017	GW	4.7	1 U	26.5	0.68 J	27.18	2.2	3	1610
S03M44	6/1/2018	GW	1.1	1 U	5.3	1 U	5.3	1 U	3 U	2040
S03M44	5/16/2019	GW	0.92 J	1 U	3.6	1 U	3.6	1 U	3 U	29
S03M44	6/30/2020	GW	10.00	1 U	60.2	NS	NA	11.7	1.1 J	113
S03M45	01/12/2004	GW	6.8	2 U			10	1 U	16.8	255
S03M45	04/02/2004	GW	6.1	1 U	4.1	1 U	4.1	1 U	4.2 B	16.9 J
S03M45	06/01/2004	GW	11	2 U			24	1 U	4.8 B	73.4
S03M45	08/12/2004	GW	22	7.6			64	3.1	10 U	57.9
S03M45	09/03/2004	GW	27	5.1 J			99	2.9 J	10 UL	111
S03M45	10/21/2004	GW	8.3	2 U			9.6	1.3	10 U	67
S03M45	04/20/2005	GW	25	5 U	24	5 U	24	5 U	2 UL	3.5 K
S03M45	09/08/2005	GW	3.3 J	5 U	4 J	5 U	4 J	5 U	2.1 U	23.1
S03M45	06/23/2006	GW	2.3	2 U	2	1 U	2	1 U	3 U	13.8
S03M45	05/11/2010	GW	13.3 K	1 UJ	20.4 K	1 UJ	20.4 K	1 UJ	3 U	5.6 U
S03M45	05/04/2011	GW	13.2 J	0.75 UJ	23.5 J	0.75 UJ	23.5 J	0.75 UJ	2 U	3.7 U
S03M45	6/11/2012	GW	0.69 J	0.75 U			0.48 J	0.75 U	1.5 J	2.8 J
S03M45	5/15/2013	GW	2.4	4.1			14.26 J	0.33 U	Not Sampled	
S03M45	5/30/2014	GW	2.1 J	0.75 UJ			8.8 J	0.75 UJ	1.7 J	3.7 U
S03M45	5/13/2015	GW	1.1	0.75 U			0.64	0.75 U	1.4 J	3.5 J
S03M45	5/17/2016	GW	0.64 J	0.75 U	0.42 J	0.75 U	0.42	0.75 U	2.3 J	5.5 J
S03M45	12/13/2017	GW	1 U	1 U	2.5	0.67 J	3.17	0.55 J	309	2130
S03M45	6/1/2018	GW	1	1 U	3.7	0.65 J	4.35	1 U	3.2	236
S03M45	5/16/2019	GW	0.92 J	1 U	2.9	1 U	2.9	1 U	2.5 J	9.7 J
S03M45	6/30/2020	GW	0.58 J	1 U	2.5	NS	NA	1 U	3.5	16.7
S03M46	08/11/2004	GW	120	6 U			1.7 J	3 U	10 U	8 B
S03M46	09/03/2004	GW	88	2 U			1.1	1 U	10 UL	4.7 B
S03M46	10/21/2004	GW	71	10 U			5 U	5 U	10 U	11.9 B
S03M46	04/21/2005	GW	67	5 U	1.5 J	5 U	1.5 J	5 U	2 B	3.1
S03M46	09/08/2005	GW	47	5 U	5 U	5 U	5 U	5 U	2.1 U	1.4 B
S03M46	06/22/2006	GW	29	2 U	1 U	1 U	1 U	1 U	3 U	3 U
S03M46	07/09/2008	GW	28.5	1 U	0.83 J	1 U	0.83 J	1 U	6 U	1.6 J
S03M46	05/21/2009	GW	32.6	1 U	0.6 J	1 U	0.6 J	1 U	3 U	5.7 U
S03M46	05/11/2010	GW	30.8 J	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	3 U	5.6 U
S03M46	05/04/2011	GW	51.2	0.75 U	0.61 J	0.75 U	0.61 J	0.75 U	2 U	3.7 U
S03M46	6/8/2012	GW	23.2	0.75 U			0.4 J	0.75 U	2 U	3.7 U

Appendix B-2
Historic Groundwater Analytical Data
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Date Sampled	Matrix	TCE	VC	CDCE	TDCE	Total DCE	CLBZ	AS	MN
	MCL or PRG (µg /L)		*5*	*2*	*70*	*100*	*---*	*100*	*10*	*314*
S03M46	5/9/2013	GW	9.1	0.33 U			0.37	0.33 U	Not Sampled	
S03M46	5/29/2014	GW	6	0.75 U			0.75 U	0.75 U	2 U	2.6 J
S03M46	5/13/2015	GW	6.2	0.75 U			4	0.75 U	2 U	8.1
S03M46	5/17/2016	GW	4.3	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	5.4 J
S03M46	12/13/2017	GW	3.3	1 U	1 U	1 U	1 U	1 U	1 U	15 U
S03M46	5/31/2018	GW	2.1	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M46	5/14/2019	GW	3	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M46	6/30/2020	GW	1.8	1 U	1 U	NS	NA	1 U	3 U	1.4 J
S03M48	06/21/2006	GW	78	0.22 J	83	7	90	2.2	3 U	941
S03M48	07/08/2008	GW	37.7	1 U	40.2	4.8	45	1 U	6 U	947
S03M48	05/19/2009	GW	28.5	1 U	88.7	4.1	92.8	1 U	3 U	730
S03M48	05/12/2010	GW	16.3	1 U	18.3	1.6	19.9	1 U	3 U	370
S03M48	05/04/2011	GW	166	2.3	108	4.7	112.7	0.75 U	2 U	790
S03M48	6/6/2012	GW	14.6	0.75 U			17.4	0.75 U	2 U	320
S03M48	5/8/2013	GW	26.5	0.49 J			22.8	1.4	Not Sampled	
S03M48	6/2/2014	GW	20	0.75 U			17.4 J	0.75 U	9.3	240
S03M48	5/18/2015	GW	1.3	0.75 U			40.2	0.75 U	6.9	1500
S03M48	5/11/2016	GW	3.7	0.61 J	64.5	5.6	70.1	0.75 U	5.3	1200
S03M48	12/6/2017	GW	1.2	0.81	3.3	2.2	5.5	0.88 J	11.5	696
S03M48	5/24/2018	GW	0.88 J	7	9.9	4.1	14	1.6	3 U	662
S03M48	5/8/2019	GW	0.73 J	6.9	10.6	4.4	15	0.97 J	1.6 J	605
S03M48	6/25/2020	GW	0.97 J	1 U	3.1	NS	NA	1 U	3	242
S03M49	09/23/2004	GW	22	1.4 J			91	1.1 J	10 U	417
S03M49	11/10/2004	GW	500	300 U			3000	150 U	3.8 B	3260
S03M49	06/21/2006	GW	79	0.43 J	190	1.6	191.6	0.53 J	3 U	61
S03M49	07/08/2008	GW	156	0.95 J	1570	16.3	1586.3	0.26 J	6 U	164
S03M49	05/19/2009	GW	22	1 U	154	1.4	155.4	1 U	3 U	33
S03M49	05/12/2010	GW	29.4 J	2.6 J	499 J	4.9 J	503.9	2.5 J	3 U	18
S03M49	05/02/2011	GW	27.1	3.8 U	430	5.4	435.4	3.8 U	2 U	770
S03M49	6/6/2012	GW	38.9	0.75 U			317.4	0.75 U	2 U	15
S03M49	5/7/2013	GW	11	0.33 U			208.1	0.33 U	Not Sampled	
S03M49	6/2/2014	GW	7.2	0.75 U			162.3	0.75 U	2 U	15
S03M49	5/20/2015	GW	51.9	0.73 J			1733	0.41 J	2 U	38
S03M49	5/10/2016	GW	60.7	3.8 U	1690	70.6	1760.6	3.8 U	2 U	37
S03M49	12/6/2017	GW	5.4	115	111	4.3	115.3	1 U	4.2	1010
S03M49	5/24/2018	GW	2.8	115	93.7	3.2	96.9	1 U	3 U	684
S03M49	5/9/2019	GW	1.6	26.4	52.6	1.4	54	1 U	1.3 J	217
S03M49	6/25/2020	GW	1.1	1 U	15.9	NS	NA	1 U	9.7	274
S03M50	08/12/2004	GW	46000	4000 U			16000	2000 U	3.6 B	16.5 B
S03M50	04/19/2005	GW	760	150	3800	42 J	3842	100 U	2 UL	895
S03M50	09/07/2005	GW	2900	1200	15000	180 J	15180	500 U	2.1 U	660
S03M50	06/21/2006	GW	150	1800	4400	49 J	4449	50 U	3 U	526
S03M50	07/09/2008	GW	151	2220	5080	108	5188	2.7	6 U	765
S03M50	05/21/2009	GW	118	645	4010	96.2	4106.2	2.4	3 U	710
S03M50	05/12/2010	GW	50.1	1160	10100 J	192	10292	5.5 J	3 U	840
S03M50	05/03/2011	GW	1.2	2340	25500	613	26113	12.5	1.9 J	480
S03M50	6/6/2012	GW	5.4	547			11840	5.9	2 U	400
S03M50	5/8/2013	GW	1.2	637			36804	21.3	Not Sampled	
S03M50	6/2/2014	GW	375 U	3100			66130	375 U	3.8	43
S03M50	5/21/2015	GW	9	2660			71370	103	3.4	22
S03M50	5/10/2016	GW	3.8 U	2390	63600	1090	64690	128	4	34
S03M50	12/6/2017	GW	1 U	5.3	2.5	13.3	15.8	188	1 U	405
S03M50	5/25/2018	GW	10 U	782	2240	54.6	2294.6	148	3 U	153
S03M50	5/8/2019	GW	25 U	4830	7300	188	7488	143	1.4 J	69.4
S03M50	6/25/2020	GW	25 U	2570	7280	NS	NA	89.2	2.6 J	127
S03M51	05/13/2010	GW	2.7	1.1	5.5	1 U	5.5	1 U	3 U	140
S03M51	05/04/2011	GW	2.3	0.75 U	1.7	0.75 U	1.7	0.75 U	2 U	38
S03M51	6/6/2012	GW	4.8	1.8			6.9	0.75 U	Not Sampled	
S03M51	5/7/2013	GW	2.7	0.33 U			3.35 J	0.33 U	Not Sampled	
S03M51	5/29/2014	GW	1.9	0.75 U			1	0.75 U	2 U	49
S03M51	5/21/2015	GW	1.8	0.75 U			1.1	0.75 U	1.5 J	150
S03M51	5/19/2016	GW	4	0.75 U	3.6	0.75 U	3.6	0.35 J	2 U	90
S03M51	12/7/2017	GW	4.9	1 U	8.8	1 U	8.8	1 U	1 U	69.1
S03M51	5/25/2018	GW	3.2	1 U	4.3	1 U	4.3	1 U	3 U	41.1
S03M51	5/16/2019	GW	1.8	1 U	3.2	1 U	3.2	1 U	3 U	36.8
S03M51	6/25/2020	GW	1.3	1 U	2.4	NS	NA	1 U	3	302
S03M52	05/14/2010	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	820
S03M52	05/02/2011	GW	0.69 J	0.75 U	0.74 J	0.75 U	0.74 J	0.75 U	2 U	370
S03M52	6/6/2012	GW	25 U	0.75 U			2.2	0.75 U	1.7 J	260
S03M52	5/15/2013	GW	0.33 UJ	0.33 UJ			0.33 U	0.33 UJ	Not Sampled	
S03M52	5/27/2014	GW	0.75 U	0.75 U			0.75 U	0.75 U	6.7	4500
S03M52	5/14/2015	GW	0.75 U	0.75 U			0.75 U	0.75 U	2 U	280
S03M52	5/11/2016	GW	0.78 J	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	1.4 J	770
S03M52	12/5/2017	GW	1 U	1 U	1 U	1 U	1 U	1 U	1.1	388
S03M52	5/21/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	156
S03M52	5/7/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	288
S03M52	6/25/2020	GW	1 U	1 U	1 U	NS	NA	1 U	3 U	93.3
S03M54	08/13/2004	GW	150	110			150	5 U	10 U	785
S03M54	09/22/2004	GW	9.9	11			47	1 U	10 U	1760
S03M54	11/10/2004	GW	6.9	15			59	2 U	10 U	2520
S03M54	04/20/2005	GW	9.4	45	47	6	53	5 U	2.6 B	2020
S03M54	09/07/2005	GW	34	220	280	36	316	7.4 J	2.1 U	2150
S03M54	06/22/2006	GW	82	220	470	43	513	12	3.5 K	1580
S03M54	07/08/2008	GW	55.4	121	573	35.4	608.4	5.5	1.8 J	1140
S03M54	05/21/2009	GW	1.8	53.1	163	16	179	4	3.4	1600
S03M54	05/13/2010	GW	1.2	22	41.8	7	48.8	5.1 J	3 U	1700
S03M54	05/04/2011	GW	0.49 J	28.9	57.4	6.9 J	64.3	1.9	1.6 J	1300
S03M54	6/6/2012	GW	1.1	15.7			47.2	2.3	1.5 J	990
S03M54	5/8/2013	GW	0.41 J	1.8			18.1	1.8	Not Sampled	
S03M54	5/29/2014	GW	0.75 U	14.6			18	1.2	1.5 J	1100
S03M54	5/18/2015	GW	0.41 J	9.3			18.2	1.2	1.6 J	1400
S03M54	5/11/2016	GW	0.63 J	5.7	8.4	0.75 U	8.4	0.89 J	1.6 J	1200
S03M54	12/11/2017	GW	1 U	3.7	2.4	3.1	5.5	3.2	4.7	1510
S03M54	5/24/2018	GW	1 U	2.9	1.8	2.7	4.5	1.4	5.2	768
S03M54	5/9/2019	GW	1 U	4.1	2	3.2	5.2	1.4	3.1	488
S03M54	6/24/2020	GW	1 U	3.7	2.2	NS	NA	1.4	3.2	643

Appendix B-2
Historic Groundwater Analytical Data
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Date Sampled	Matrix	TCE	VC	CDCE	TDCE	Total DCE	CLBZ	AS	MN
	MCL or PRG (µg /L)		*5*	*2*	*70*	*100*	*---*	*100*	*10*	*314*
S03M57	05/13/2010	GW	1 UJ	1.9 J	3.1 J	0.61 J	3.71	6120 J	3.9	230
S03M57	05/05/2011	GW	0.75 UJ	1.5 J	2.2 J	0.98 J	3.18	4630	3.3	310
S03M57	6/11/2012	GW	0.75 UL	1.5			2.07	0.75 UL	2.8 J	230
S03M57	5/9/2013	GW	0.33 U	1.3			2.96 J	8760 J	Not Sampled	
S03M57	5/28/2014	GW	7.5 U	7.5 U			7.5 U	3880 J	1.7 J	210
S03M57	5/15/2015	GW	0.75 U	0.71 J			1.29	2710	1.1 J	240
S03M57	5/12/2016	GW	0.75 U	1.3	6.2	0.51 J	6.71	2400	2 U	220
S03M57	12/11/2017	GW	5 U	5 U	5 U	5 U	5 U	907	1 U	200
S03M57	5/23/2018	GW	5 U	5 U	5 U	5 U	5 U	2020	4.1	141
S03M57	5/7/2019	GW	1 U	1 U	0.52 J	1 U	0.52 J	625	1.4 J	123
S03M57	6/23/2020	GW	5 U	5 U	5 U	NS	NA	1150	0.96 J	153
S03M61D	07/14/2008	GW	1 U	1 U	1 U	1 U	1 U	1 U	6 U	24.8
S03M61D	05/22/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	4	18
S03M61S	07/14/2008	GW	1 U	1 U	1 U	1 U	1 U	1 U	6 U	13
S03M61S	05/21/2009	GW	1 U	1 U	1 U	1 U	1 U	1 U	1.6 J	7.1
S03M61S	05/12/2010	GW	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	3 U	5.6 U
S03M61S	05/03/2011	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	3.7 U
S03M61S	6/7/2012	GW	0.75 U	0.75 U			0.75 U	0.75 U	2 U	3.7 U
S03M61S	5/13/2013	GW	0.33 UJ	0.33 UJ			0.33 U	0.33 UJ	Not Sampled	
S03M61S	5/22/2014	GW	0.75 U	0.75 U			0.75 U	0.75 U	2 U	2.1 J
S03M61S	5/12/2015	GW	0.75 U	0.75 U			0.75 U	0.75 U	2 U	4.6 J
S03M61S	07/14/2008	GW	2.8	1 U	2.8	1 U	2.8	1 U	6 U	179
S03M61S	5/16/2016	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	1 J	4.2 J
S03M61S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
S03M61S	5/31/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M61S	5/14/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M61S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
S03M62D	05/21/2009	GW	1.7	1 U	1.9	1 U	1.9	1 U	6.4	78
S03M62S	07/15/2008	GW	8.6	1 U	2.6	1 U	2.6	1 U	6 U	5.5 J
S03M62S	05/21/2009	GW	5.8	1 U	1.3	1 U	1.3	1 U	3 U	2 J
S03M62S	05/12/2010	GW	7.8	1 U	1.1	1 U	1.1	1 U	3 U	5.6 U
S03M62S	05/03/2011	GW	10.1	0.75 U	1	0.75 U	1	0.8 J	2 U	3.7 U
S03M62S	6/7/2012	GW	8.7	0.75 U			1.1	0.75 U	2 U	4.6 J
S03M62S	5/15/2013	GW	0.5 J	0.33 U			0.33 U	0.33 U	Not Sampled	
S03M62S	5/22/2014	GW	0.83 J	0.75 U			0.75 U	0.75 U	2 U	3.7 U
S03M62S	5/12/2015	GW	0.76 J	0.75 U			0.75 U	0.75 U	2 U	1.9 J
S03M62S	5/16/2016	GW	0.95 J	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	2.5 J
S03M62S	12/13/2017	GW	0.75 J	1 U	1 U	1 U	1 U	1 U	1 U	15 U
S03M62S	5/29/2018	GW	0.61 J	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M62S	5/15/2019	GW	0.53 J	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M62S	6/29/2020	GW	1 U	1 U	1 U	NS	NA	1 U	3 U	15 U
S03M63D1	08/16/2010	GW	400 J	22.8 J	183 J	3 J	186	5.4 J		
S03M63D1	05/05/2011	GW	162 J	15.9 J	66.9 J	1.4 J	68.3	1.2 J	2 U	3.7 U
S03M63D1	6/7/2012	GW	109 J	9.2 J			42.3 J	0.71 J	2 U	3.7 U
S03M63D1	5/14/2013	GW	67.9 J	6.5 J			24.2 J	0.33 UJ	Not Sampled	
S03M63D1	6/2/2014	GW	46.7	3.9			15.4 J	0.37 J	2 U	3.7 U
S03M63D1	5/21/2015	GW	24.5	2.8			8.4	0.75 U	2 U	3.7 U
S03M63D1	5/12/2016	GW	20.2	1.8	6.9	0.45 J	7.35	0.75 U	2 U	3.7 U
S03M63D1	12/11/2017	GW	18	1.7	4.9	1 U	4.9	1 U	1 U	15 U
S03M63D1	5/31/2018	GW	11.8	1.4	4.3	1 U	4.3	1 U	3 U	15 U
S03M63D1	5/13/2019	GW	12.3	1.5	4.2	1 U	4.2	1 U	3 U	2 J
S03M63D1	6/26/2020	GW	13.3	1.1	3.6	NS	NA	1 U	3 U	2 J
S03M63D2	03/21/2011	GW	1500 D	29	230 D	13	243	0.97 J		
S03M63D2	04/05/2011	GW	970 D	21	170 D	3.7	173.7	0.53 J		
S03M63D2	05/02/2011	GW	609 L	28.8 L	182 L	3.2 L	185.2 L	0.49 J	1.6 J	3.9 J
S03M63D2	6/7/2012	GW	395	13.5			127.3	0.75 U		
S03M63D2	5/14/2013	GW	373 J	12.8 J			94.4 J	0.33 UJ	Not Sampled	
S03M63D2	6/2/2014	GW	271	8.2 J			82.2	0.75 U	11	28
S03M63D2	5/20/2015	GW	261	9.2			79.2	0.75 U	6.9	3 J
S03M63D2	5/12/2016	GW	237	10.2	78.2	2.7	80.9	0.35 J	7.4	2.6 J
S03M63D2	12/12/2017	GW	89.9	5.5	25.3	1.6	26.9	1 U	1.6	15 U
S03M63D2	5/31/2018	GW	75	5.4	25.7	1.6	27.3	1 U	3 U	15 U
S03M63D2	5/14/2019	GW	62.5	6.3	24.6	1.4	26	1 U	1.7 J	15 U
S03M63D2	6/26/2020	GW	72.6	5.1	22.7	NS	NA	1 U	1.8 J	15 U
S03M63D3	04/05/2011	GW	1200 D	31	210 D	4.5	214.5	0.89 J		
S03M63D3	05/03/2011	GW	714	30.7	156	4.3	160.3	0.71 J	1.6 J	64
S03M63D3	6/7/2012	GW	366	14.7			131.8	0.75 U	7.2	19
S03M63D3	5/10/2013	GW	313	11.3			80.8 J	1.7 U	Not Sampled	
S03M63D3	6/2/2014	GW	304	9.8			83.9 J	3.8 U	11	58
S03M63D3	5/20/2015	GW	198	9.9			65.8	3.8 U	14	8.7
S03M63D3	5/12/2016	GW	177	8.9	62.5	1.3	63.8	0.75 U	17	11
S03M63D3	12/15/2017	GW	114	7.4	49.7	2.9	52.6	1 U	2.6	15 U
S03M63D3	5/31/2018	GW	138	6.8	46.9	3.2	50.1	1 U	3 U	15 U
S03M63D3	5/9/2019	GW	87.4	6.5	36.3	2.8	39.1	1 U	8.3	187
S03M63D3	6/25/2020	GW	92.2	6	34.9	NS	NA	1 U	2.8 J	15.2
S03M64D1	08/16/2010	GW	119	91.5	296	21	317	1670		
S03M64D1	05/05/2011	GW	57.2 J	75.5 J	137 J	10.2 J	147.2 J	1100	40	6
S03M64D1	6/8/2012	GW	59.2	57.3			115.8	1090	3.8	4 J
S03M64D1	5/7/2013	GW	36	55.4			79.7	789 J	Not Sampled	
S03M64D1	5/28/2014	GW	30.3 J	57.4			69.8	813	46	1.9 J
S03M64D1	5/18/2015	GW	17.3	46			59.7	517	42	3 J
S03M64D1	5/19/2016	GW	33.9	53.5	50.3	9.8 J	60.1	1550	39	3.7 U
S03M64D1	12/14/2017	GW	14.1	16.6	21.9	7.2	29.1	780	16.4	15 U
S03M64D1	5/25/2018	GW	10.2	23.6	19	5.4	24.4	458	15.3	15 U
S03M64D1	5/8/2019	GW	8.4	21.4	14.9	5	19.9	513	12.5	15 U
S03M64D1	6/24/2020	GW	7.5	16.2	11.3	NS	NA	561	8.8	15 U
S03M64D2	08/16/2010	GW	38.8 J	25.7 J	115 J	2.3 J	117.3	1140 J		
S03M64D2	05/03/2011	GW	20.2 J	24.1 J	59.3 J	1.9 J	61.2 J	717 J	47	3.7 U
S03M64D2	6/11/2012	GW	14.2	13.9			46.7	436	53	3.7 U
S03M64D2	5/7/2013	GW	11.8	14.1			36.1	361	Not Sampled	
S03M64D2	5/28/2014	GW	7.5	10.2			29.5	241	57	3.7 U
S03M64D2	5/19/2015	GW	9.1	13.7			29.6	285	60	28
S03M64D2	5/17/2016	GW	11.2	13.7	28.4	2.2	30.6	275	58	3.7 U

Appendix B-2
Historic Groundwater Analytical Data
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Date Sampled	Matrix	TCE	VC	CDCE	TDCE	Total DCE	CLBZ	AS	MN
	MCL or PRG (µg /L)		*5*	*2*	*70*	*100*	*---*	*100*	*10*	*314*
S03M64D2	12/14/2017	GW	8.8	10.5	18.7	2.6	21.3	149	27.2	15 U
S03M64D2	5/29/2018	GW	5.3	9.3	14.8	1.9	16.7	83.6	27.1	15 U
S03M64D2	5/14/2019	GW	4.6	8.2	14.4	2.1	16.5	79.9	28.9	15 U
S03M64D2	6/26/2020	GW	1.7 J	3 J	7.9 J	NS	NA	30.3 J	28.8	15 U
S03M64D3	03/22/2011	GW	96	9.2	27	1.3	28.3	5.2		
S03M64D3	04/05/2011	GW	650 D	20	110 D	2.6	112.6	0.56 J		
S03M64D3	05/04/2011	GW	32.1	6.3	14.2	0.71 J	14.91	0.75 U	3.2	550
S03M64D3	6/8/2012	GW	278	13.9			79.2	3.8 U	2 U	3.7 U
S03M64D3	5/7/2013	GW	55.8	13.8			27.29 J	0.33 U	Not Sampled	
S03M64D3	6/3/2014	GW	97.7 J	15.2 J			41 J	0.55 J	32	690
S03M64D3	5/18/2015	GW	158	22.8			49.4	1.1	10	67
S03M64D3	5/18/2016	GW	160	53.5	143	3.9	146.9	2.1	4.2	3.1 J
S03M64D3	12/2017	Not Sampled								
S03M64D3	5/2018	Not Sampled								
S03M64D3	5/2019	Not Sampled								
S03M64D3	6/2020	Not Sampled								
S03M65D	08/16/2010	GW	0.9 J	1 U	1 U	1 U	1 U	1 U		
S03M65D	05/05/2011	GW	0.84 J	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	4.1	3.7 U
S03M65D	6/12/2012	GW	0.6 J	0.75 U			0.75 U	5.8	3.8	3.7 U
S03M65D	5/9/2013	GW	0.42 J	0.33 U			0.49	1.8	Not Sampled	
S03M65D	6/3/2014	GW	3.8 U	3.8 U			3.8 UJ	3.8 U	16	120
S03M65D	5/18/2015	GW	0.75 U	0.75 U			75 U	0.75 U	20	120
S03M65D	5/19/2016	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	13	3.7 U
S03M65D	12/12/2017	GW	0.32 J	1 U	1 U	1 U	1 U	1 U	11.5	15 U
S03M65D	5/23/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	12.8	15 U
S03M65D	5/10/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	11.5	15 U
S03M65D	6/26/2020	GW	1 UJ	1 UJ	1 UJ	NS	NA	1 UJ	17.3	15 U
S03M66D1	08/16/2010	GW	45.7	1 U	1.1	1 U	1.1	2.6 J		
S03M66D1	05/05/2011	GW	11	0.75 U	0.34 J	0.75 U	0.34 J	0.58 J	18	3.7 U
S03M66D1	6/8/2012	GW	6.1	0.75 U			0.75 U	0.75 U	20	3.7 U
S03M66D1	5/9/2013	GW	0.51 J	0.33 U			0.33 U	0.33 U	Not Sampled	
S03M66D1	5/29/2014	GW	2.2	0.75 U			0.75 U	0.75 U	29	3.7 U
S03M66D1	5/13/2015	GW	1.2	0.75 U			0.75 U	0.75 U	33	2.9 J
S03M66D1	5/17/2016	GW	1.6	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	30	2 J
S03M66D1	12/14/2017	GW	1.2	1 U	1 U	1 U	1 U	1 U	29.5	15 U
S03M66D1	5/31/2018	GW	0.83 J	1 U	1 U	1 U	1 U	1 U	29	15 U
S03M66D1	5/14/2019	GW	0.9 J	1 U	1 U	1 U	1 U	1 U	31.2	15 U
S03M66D1	6/30/2020	GW	0.98 J	1 U	1 U	NS	NA	1 U	32.6	15 U
S03M66D2	08/16/2010	GW	57.1	1 U	1.5	1 U	1.5	4.3		
S03M66D2	05/04/2011	GW	20.3	0.75 U	0.69 J	0.75 U	0.69 J	1.5	18	1.9 J
S03M66D2	6/8/2012	GW	25.2	0.75 UL			0.99 L	1.1	22	3.7 U
S03M66D2	5/9/2013	GW	4.6	0.33 U			1.3	0.33 U	Not Sampled	
S03M66D2	5/29/2014	GW	14.7	0.75 U			0.69 J	0.55 J	27	3.7 U
S03M66D2	5/13/2015	GW	11.2	0.75 U			0.55	0.75 U	29	3.7 U
S03M66D2	5/17/2016	GW	11.4	0.75 U	0.72 J	0.75 U	0.72 J	0.38 J	29	2.5 J
S03M66D2	12/14/2017	GW	8.2	1 U	1 U	1 U	1 U	1 U	26.5	15 U
S03M66D2	5/31/2018	GW	5.7	1 U	1 U	1 U	1 U	1 U	25.6	15 U
S03M66D2	5/14/2019	GW	5.7	1 U	1 U	1 U	1 U	1 U	26.6	15 U
S03M66D2	6/30/2020	GW	6.3	1 U	1 U	NS	NA	1 U	26.9	15 U
S03M67D1	03/14/2011	GW	12	0.5 U	1.7	0.5 U	1.7	0.5 U		
S03M67D1	04/04/2011	GW	9.6	0.5 U	1.3	0.5 U	1.3	0.5 U		
S03M67D1	05/05/2011	GW	8	0.75 U	1.1	0.75 U	1.1	0.75 U	2 U	23
S03M67D1	6/7/2012	GW	6.9	0.75 U			1.6	0.75 U	2	16
S03M67D1	5/13/2013	GW	4.4 J	0.33 UJ			0.33 U	0.33 UJ	Not Sampled	
S03M67D1	5/22/2014	GW	0.75 U	0.75 U			1.5	0.75 U	2 U	21
S03M67D1	5/14/2015	GW	0.7 J	0.75 U			1.2	0.75 U	2 U	24
S03M67D1	5/16/2016	GW	0.75 U	0.75 U	2.2	0.75 U	2.2	0.75 U	2 U	21
S03M67D1	12/13/2017	GW	0.37 J	1 U	1.1	1 U	1.1	1 U	1.2	31
S03M67D1	5/30/2018	GW	1 U	1 U	1.1	1 U	1.1	1 U	3 U	19.4
S03M67D1	5/16/2019	GW	1 U	1 U	0.98 J	1 U	0.98 J	1 U	0.94 J	19.6
S03M67D1	7/1/2020	GW	1 U	1 U	0.58 J	NS	NA	1 U	1.2 J	17.9
S03M67D2	3/11/2011	GW	15	0.5 U	3.2	0.5 U	3.2	0.5 U		
S03M67D2	03/11/2011	GW	17	0.5 U	2.6	0.5 U	2.6	0.5 U		
S03M67D2	04/04/2011	GW	14	0.5 U	1.9	0.5 U	1.9	0.5 U		
S03M67D2	05/04/2011	GW	8.3	0.75 U	1.7	0.75 U	1.7	0.75 U	2 U	15
S03M67D2	6/7/2012	GW	11.5	0.75 U			2.6	0.75 U	2 U	6
S03M67D2	5/13/2013	GW	0.33 U	0.33 U			8.6	0.33 U	Not Sampled	
S03M67D2	5/22/2014	GW	0.75 U	0.75 U			7.1	0.75 U	2 U	19
S03M67D2	5/14/2015	GW	0.81 J	0.75 U			4.2	0.75 U	2 U	29
S03M67D2	5/16/2016	GW	0.75 U	0.51 J	7.2	0.75 U	7.2	0.75 U	2 U	23
S03M67D2	12/13/2017	GW	1.6	1 U	2.6	1 U	2.6	1 U	1 U	23.4
S03M67D2	5/29/2018	GW	1.4	1 U	1.8	1 U	1.8	1 U	3 U	15 U
S03M67D2	5/16/2019	GW	0.89 J	1 U	0.87 J	1 U	0.87 J	1 U	3 U	6.2 J
S03M67D2	7/1/2020	GW	1.2	1 U	1.1	NS	NA	1 U	3 U	6.1 J
S03M68D1	03/15/2011	GW	1.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
S03M68D1	03/16/2011	GW	0.51 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
S03M68D1	04/04/2011	GW	0.99 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
S03M68D1	05/05/2011	GW	0.73 J	0.75 U	0.53 J	0.75 U	0.53 J	0.75 U	2 U	17
S03M68D1	6/7/2012	GW	0.75 U	0.75 U			0.33 J	0.75 U		
S03M68D1	5/14/2013	GW	0.33 UJ	0.33 UJ			0.33 U	0.33 UJ	Not Sampled	
S03M68D1	5/23/2014	GW	0.75 U	0.75 U			0.75 U	0.75 U	2 U	3.9 J
S03M68D1	5/14/2015	GW	0.75 U	0.75 U			0.75 U	0.75 U	1.4 J	40
S03M68D1	5/18/2016	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	9.3
S03M68D1	12/14/2017	GW	1 U	1 U	1 U	1 U	1 U	1 U	1 U	15 U
S03M68D1	5/30/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M68D1	5/15/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	2 J
S03M68D1	6/30/2020	GW	1 U	1 U	1 U	NS	NA	1 U	3 U	15 U
S03M68D2	03/15/2011	GW	2	0.5 U	0.62 J	0.5 U	0.62 J	0.5 U		
S03M68D2	03/15/2011	GW	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
S03M68D2	03/16/2011	GW	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
S03M68D2	03/16/2011	GW	0.81 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
S03M68D2	04/05/2011	GW	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
S03M68D2	05/04/2011	GW	0.47 J	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	1.4 J	120
S03M68D2	6/7/2012	GW	0.75 U	0.75 U			0.75 U	0.75 U	2 U	3.7 U
S03M68D2	5/14/2013	GW	0.33 U	0.33 U			0.33 U	0.33 U	Not Sampled	
S03M68D2	5/23/2014	GW	0.75 U	0.75 U			0.75 U	0.75 U	1.9 J	120

Appendix B-2
Historic Groundwater Analytical Data
Site 3 - Ball Road Landfill and Burn Pits
Naval Support Activity, Mechanicsburg, Pennsylvania

Well ID	Date Sampled	Matrix	TCE	VC	CDCE	TDCE	Total DCE	CLBZ	AS	MN
	MCL or PRG (µg /L)		*5*	*2*	*70*	*100*	*---*	*100*	*10*	*314*
S03M68D2	5/14/2015	GW	0.75 U	0.75 U			0.75 U	0.75 U	4.3	110
S03M68D2	5/18/2016	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	3.1	98
S03M68D2	12/15/2017	GW	1 U	1 U	1 U	1 U	1 U	1 U	6	88.7
S03M68D2	5/30/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	26.2
S03M68D2	5/15/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	4.4	76.4
S03M68D2	6/30/2020	GW	1 U	1 U	1 U	NS	NA	1 U	3.2	60.4
S03M69D1	04/05/2011	GW	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
S03M69D1	05/05/2011	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.7 J	2 U	10
S03M69D1	6/11/2012	GW	0.75 U	0.75 U			0.75 U	0.38 J	2.1 J	11
S03M69D1	5/14/2013	GW	0.33 U	0.33 U			0.33 U	0.33 U	Not Sampled	
S03M69D1	5/23/2014	GW	0.75 U	0.75 U			0.75 U	0.75 U	2.1 J	8.1
S03M69D1	5/14/2015	GW	0.75 U	0.75 U			0.75 U	0.75 U	2.2 J	8.5
S03M69D1	5/19/2016	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	2 U	7.3
S03M69D1	12/15/2017	GW	1 U	1 U	1 U	1 U	1 U	1 U	2	15.8
S03M69D1	5/30/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	3 U	15 U
S03M69D1	5/14/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	2.1 J	4.5 J
S03M69D1	6/30/2020	GW	1 U	1 U	1 U	NS	NA	1 U	1.9 J	4.4 J
S03M69D2	6/11/2012	GW	0.75 U	0.75 U			0.75 U	0.75 U	1.4 J	10
S03M69D2	5/14/2013	GW	7.7	0.33 U			0.33 U	0.33 U	Not Sampled	
S03M69D2	5/23/2014	GW	0.75 U	0.75 U			0.75 U	0.75 U	4	16
S03M69D2	5/21/2015	GW	0.75 U	0.75 U			0.75 U	0.75 U	6.2	12
S03M69D2	5/19/2016	GW	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	10	8.7
S03M69D2	12/18/2017	GW	1 U	1 U	1 U	1 U	1 U	1 U	5	43.4
S03M69D2	5/30/2018	GW	1 U	1 U	1 U	1 U	1 U	1 U	10.6	15 U
S03M69D2	5/14/2019	GW	1 U	1 U	1 U	1 U	1 U	1 U	9.7	4.5 J
S03M69D2	6/30/2020	GW	1 U	1 U	1 U	NS	NA	1 U	9.5	4.4 J
S03M70	6/11/2012	GW	58.5	1.2			22.39	0.75 U	3.1	3.6 J
S03M70	5/15/2013	GW	0.94 J	0.33 U			11.6	0.33 U	Not Sampled	
S03M70	6/2/2014	GW	1.4	1.6			147.8	0.75 U	8.2	58
S03M70	5/18/2015	GW	3.1	1.2			63.6	0.75 U	18	9
S03M70	5/11/2016	GW	3.0	1.5	47.8	0.73 J	48.5 J	0.75 U	18	9
S03M70	12/6/2017	GW	1.0 U	51.1	47.4	4.7	52.1	1 U	20.4	48
S03M70	5/23/2018	GW	0.8 J	27.8	23.7	2.8	26.5	1 U	23.1	72.5
S03M70	5/10/2019	GW	1.0 U	37.6	6.4	3.1	9.5	1 U	22	101
S03M70	6/29/2020	GW	1.0 U	9.1	3.4	NS	NA	1 U	40.6	105
S03M71	6/11/2012	GW	5.5	14.7			10.36	0.75 U	2 U	3.7 U
S03M71	5/9/2013	GW	7.4	11.5			8.1	0.33 U	Not Sampled	
S03M71	6/3/2014	GW	6.9	9.5			8.3 J	0.75 U	9.7	5 J
S03M71	5/19/2015	GW	4.6	8.3			7.1	0.75 U	13	5.4 J
S03M71	5/18/2016	GW	5.4	8.7	7	0.75 U	7	0.75 U	12	4.3 J
S03M71	12/18/2017	GW	4.9	7.8	6.1	1 U	6.1	1 U	13.5	15 U
S03M71	5/29/2018	GW	4.4	7.5	5.8	1 U	5.8	1 U	13.3	15 U
S03M71	5/14/2019	GW	3.1	5.4	3.5	1 U	3.5	1 U	3.5	6.5 J
S03M71	6/29/2020	GW	1.4 J	1.4	0.95 J	NS	NA	1 U	1.4 J	7.7 J
S03M72	6/11/2012	GW	3.4	0.5 L			5	677	2 U	3.7 U
S03M72	6/3/2014	GW	3.8 U	3.8 U			1.7 J	3.8 U	31	19
S03M72	5/20/2015	GW	1.7	0.57 J			1.3	0.75 U	20	9.5
S03M72	5/19/2016	GW	1.7	0.64 J	1.2	0.75 U	1.2	0.75 U	13	2.2 J
S03M72	12/5/2017	GW	2.2	0.69 J	0.85 J	1 U	0.85 J	1 U	11	15 U
S03M72	5/23/2018	GW	1.7	1 U	0.85 J	1 U	0.85 J	1 U	9.4	15 U
S03M72	5/14/2019	GW	1.4	1 U	0.75 J	1 U	0.75 J	1 U	10.7	1.5 J
S03M72	6/29/2020	GW	1.7 J	1 U	0.66 J	NS	NA	1 U	9.1	15 U
S03M73D1	6/11/2012	GW	37.8	55			92.2	6.3	1.7 J	55
S03M73D1	5/14/2013	GW	1.4	1.4			4.3	2.9	Not Sampled	
S03M73D1	5/30/2014	GW	1 J	84.6 J			177.9 J	4.4 J	2.1 J	240
S03M73D1	5/20/2015	GW	0.68 J	18.3			46.7	2.3	1.3 J	220
S03M73D1	5/11/2016	GW	37.4	34.8	70.5	2.2	72.7	2.4	1.5 J	190
S03M73D1	12/12/2017	GW	22.1	26.6	79.5	1.6	81.1	3.1	7.4	351
S03M73D1	5/29/2018	GW	1.9	21.3	54.7	1.5	56.2	2.9	6.7	376
S03M73D1	5/13/2019	GW	40.3	44.8	129	2.3	131.3	2.8	6.9	366
S03M73D1	6/26/2020	GW	24.4 J	13.5 J	60.3 J	NS	NA	0.73 J	2.2 J	266
S03M73D2	6/11/2012	GW	19.3	24.5			40.6	4.6	2 U	85
S03M73D2	5/14/2013	GW	4	20.5			40.35 J	0.37 J	Not Sampled	
S03M73D2	5/30/2014	GW	0.75 UJ	0.75 UJ			1.61 J	2 J	2 U	81
S03M73D2	5/20/2015	GW	0.75 U	1.3			1.55	0.36 J	4.1	25
S03M73D2	5/11/2016	GW	0.75 U	1.1	0.83 J	0.37 J	1.2	0.75 U	3.9	27
S03M73D2	12/12/2017	GW	1 U	1 U	0.66 J	0.74 J	1.4	0.4 J	4.1	24.8
S03M73D2	5/29/2018	GW	1 U	0.83 J	0.6 J	1 U	0.6 J	0.41 J	3.4	24.6
S03M73D2	5/13/2019	GW	1.4	1.1	2.4	1 U	2.4	1 U	2.7 J	25.4
S03M73D2	6/26/2020	GW	1 U	1 U	1 U	NS	NA	1 U	3 U	97.9
S07M05	04/04/2002	GW	16	2 U			0.66 J	1 U	10 U	1.1 B
S07M05	07/15/2008	GW	2.1	1 U	0.73 J	1 U	0.73 J	1 U	6 U	1.3 J
S07M05	05/22/2009	GW	1.6	1 U	0.59 J	1 U	0.59 J	1 U	3 U	5.7 U
S07M05	05/13/2010	GW	1.9	1 U	1 U	1 U	1 U	1 U	3 U	3.8 J
SRS-01	04/08/2002	GW	13	2 U			7.2	1 U	10 U	0.86 B
SRS-01	07/14/2008	GW	3.5	1 U	1.4	1 U	1.4	1 U	6 U	1.1 J
SRS-01	05/21/2009	GW	3	1 U	1.2	1 U	1.2	1 U	3 U	5.7 U
SRS-01	05/11/2010	GW	2.4 K	1 UJ	0.67 J	1 UJ	0.67 J	1 UJ	3 U	5.6 U
SRS-01	2/16/2018	GW	0.4 J	1 U	1 U	1 U	1 U	1 U	1 U	15 U
SSP-08	04/08/2002	GW	2.8	2 U			3.4	1 U	10 U	5.2 B
SSP-08	07/14/2008	GW	1.7	1 U	1.9	1 U	1.9	1 U	6 U	10.6
SSP-08	05/21/2009	GW	2.8	0.93 J	7.2	1 U	7.2	1 U	3 U	3.7 J
SSP-08	05/11/2010	GW	2.6 K	1 UJ	3.4 K	1 UJ	3.4 K	1 UJ	3 U	11
SSP-08	2/16/2018	GW	0.68 J	1 U	2.7	1 U	2.7	1 U	1 U	15 U
TSR-SI	05/21/2009	GW	0.99 J	1 U	1.2	1 U	1.2	1 U	3 U	5.7 U
TSR-SI	05/11/2010	GW	0.66 J	1 UJ	0.81 J	1 UJ	0.81 J	1 UJ	3 U	5.6 U
TSR-SI	05/02/2011	GW	0.43 J	0.75 UJ	0.45 J	0.75 UJ	0.45 J	0.75 UJ	2 U	3.7 U
TSR-SI	2/16/2018	GW	1 U	1 U	0.55 J	1 U	0.55 J	1 U	1 U	15 U

MCL/PRG = Maximum Contaminant Level/Preliminary Remedial Goal
GW = Groundwater
J = Estimated Value
TCE = Trichloroethene
VC = Vinyl Chloride
CDCE = cis-1,2-Dichloroethene
TDCE = trans-1,2-Dichloroethene
CLBZ = Chlorobenzene
AS = Arsenic
MN = Manganese
NS = Not Sampled
NA = Not Applicable

APPENDIX C

Data Validation Reports

QA/QC REVIEW OF 8260 VOLATILES DATA

Site 3 - Naval Support Activity (NSA) - Mechanicsburg, PA
SGS Sample Delivery Group No. JD8742
June 2020 – Groundwater Samples

Data Completeness: The data deliverables pertaining to 46 groundwater sample locations, 5 field duplicate samples, 2 equipment rinsate blank samples, and 5 trip blank samples were complete. The samples were analyzed in eight analytical batches for selected volatile organic compounds using EPA Method 8260C (GCMS).

Chain of Custody: The chain of custody documentation was complete; no qualifiers were applied.

Holding Times: The samples were analyzed within the required holding times; no qualifiers were applied.

GC/MS Instrument Performance Check: Bromofluorobenzene (BFB) was run at least every 12 hours of analysis and all BFB ion abundance criteria were within control limits. No qualifiers were applied.

Initial Calibration: Initial calibration standards were run at the specified sequence and frequency. The target compound had relative response factors (RRF) above the allowable minimum. The percent relative standard deviations (%RSD) of the RRFs were below the allowable maximum for the target compounds. No qualifiers were applied.

Continuing Calibration Verification: Continuing calibration standards were run at the specified sequence and frequency. The percent difference (%D) between the initial calibration RRF and the continuing calibration RRF were below the allowable maximum for the target compounds. No qualifiers were applied.

Blanks: *Method Blank* – The eight associated method blank samples reported the target compounds as not detected. *Equipment Blank* – The two equipment rinsate samples (EB-062420 and EB-063020) reported the target compounds as not detected. *Trip Blank* – The five trip blank samples reported the target compounds as not detected. *Qualifiers* - No qualifiers were applied.

Surrogate (DMC) Recovery: Recoveries of the deuterated monitoring compounds (i.e., surrogate compounds: dibromofluoromethane, 1,2-dichloroethane-d4, toluene-d8, and 4-bromofluorobenzene) were within control and advisory limits. No qualifiers were applied.

Field Duplicates: Five field duplicates were collected and analyzed in this SDG. Review of the data between three of the **samples (S03M18-062420, S03M50-062520** and **S03M64D1-062420**) and their *duplicates* (*S03M18-062420DUP, S03M50D-062520,* and *S03M64D1D-062420*), indicates very good correlation for the detected

compounds. Review of the data between **samples** (**S03M17-062420** and **S03M41-062520**) and their *duplicates* (*S03M17D-062420* and *S03M41D-062520*), indicates fair correlation for the detected compounds, most likely due to the samples being analyzed at different dilution ratios (e.g., 10X versus 25X) in different analytical batches. No qualifiers were applied.

Matrix Spike/Matrix Spike Duplicates: For the three site-specific MS/MSD samples (S03M17, S03M50, and S03M64D1), the percent recoveries and relative percent differences were within control limits, with the exception of chlorobenzene in S03M17, and cis-1,2-dichloroethene and vinyl chloride in S03M50, most likely due to relatively high analyte concentration in the original samples relative to the spike amount. No qualifiers were applied. For the five non-site-specific MS/MSD samples, the percent recoveries and relative percent differences were within control limits, with the exception of 1,2,4-trimethylbenzene in one of the MS/MSD sample sets, most likely due to relatively high analyte concentration in the original samples relative to the spike amount. No qualifiers were applied.

Laboratory Control Spike: For seven of the eight LCS samples, the percent recoveries for the target compounds were within the control limits. For the other LCS sample, the percent recovery for the target compounds were within the control limits, with the exception of trichloroethene (marginally high recovery). Positive results for trichloroethene in the corresponding samples are considered estimates and flagged (J); qualification of non-detects is not necessary. Qualifiers were applied to S03M71 and S03M72.

Internal Standard Area Summary: All internal standard areas and retention times for fluorobenzene, chlorobenzene-d5, and 1,4-dichlorobenzene-d4 were within control limits. No qualifiers were added.

Compound ID: All positive-result compounds met RRT and ion spectra criteria. No qualifiers were applied.

Quantitation/Reporting Limits: Compounds that are qualitatively identified at concentrations below their respective CRQL (i.e., reporting limits) are reported with a (J) qualifier to indicate that they are quantitative estimates. The (J) qualifier is also used to indicate that the quantitation is an estimate due to discrepancies in meeting sample collection criteria (i.e., head-space in vial) although the analyses and instrument performance met quality control limits. As such, the (J) qualifier was applied S0M64D2, S03M65D, and S03M73D1.

Ten samples were analyzed for selected compounds at a 2.5X, 5X, 10X, 25X, or 50X dilution. The reporting limits for these compounds were adjusted accordingly.

OVERALL ASSESSMENT: The checked data were within acceptable quantitation and qualitation limits. Minor issues were identified and qualifiers added; no major issues, however, were encountered during the volatiles data validation effort.

QA/QC REVIEW OF PCB DATA

Site 3 - Naval Support Activity (NSA) - Mechanicsburg, PA
SGS Sample Delivery Group No. JD8742
June 2020 – Groundwater Samples

Data Completeness: The data deliverables pertaining to 46 groundwater sample locations, 5 field duplicate samples, and 2 equipment rinsate blank sample were complete. The samples were analyzed in five analytical batches for Aroclor 1260 using EPA Method 8082A (GCLC).

Chain of Custody: The chain of custody documentation was complete; no qualifiers were applied.

Holding Times: The samples were extracted and analyzed within the required holding times; no qualifiers were applied.

Initial Calibration: A six-point initial calibration was performed at the specified sequence and frequency. The percent relative standard deviations (%RSD) were within control limits and retention time windows were established. No qualifiers were applied.

Continuing Calibration: Continuing calibration verification standards were run at the specified sequence and frequency. The relative percent difference (%D) and the retention times were within the control limits for the target compound. No qualifiers were applied.

Blanks: The five associated method blank samples reported the target compound as not detected. Instrument blanks were analyzed in the required sequence and frequency; the target compound was not detected. ***Equipment Blank*** – The equipment rinsate samples (EB-062420 and EB-063020) reported the target compound as not detected. ***Qualifiers*** - No qualifiers were applied.

System Monitoring (Surrogate Recovery): Decachlorobiphenyl (DCB) and tetrachloro-m-xylene (TCX) recoveries were within the control limits, with the exception of high recoveries of TCX in two samples (S03M16 and S03M67D2). Results for these two samples are considered estimates and flagged (J) for detects and (UJ) for non-detects. Qualifiers were applied.

Field Duplicates: Five field duplicates were collected and analyzed in this SDG. Review of the data between the **samples (S03M17-062420, S03M18-062420, S03M41-062520, S03M50-062520** and **S03M64D1-062420**) and their *duplicates* (*S03M17D-062420, S03M18-062420DUP, S03M41D-062520, S03M50D-062520,* and *S03M64D1D-062420*), indicates good correlation for the detected compound. No qualifiers were applied.

Matrix Spike/Matrix Spike Duplicate: For two of the three site-specific MS/MSD samples (S03M50 and S03M64D1), the percent recoveries and relative percent differences were within control limits. For the other site-specific MS/MSD samples (S03M17), the percent recoveries were outside control limits, most likely due to relatively high analyte concentration in the original sample relative to the spike amount; although the relative percent difference was within control limits. No qualifiers were applied

Laboratory Control Spike/Laboratory Control Spike Duplicate: For the five LCS samples and three LCSD samples, the percent recovery and relative percent difference for the target compound were within the control limits. No qualifiers were applied.

Compound Identification: Dual column analysis was performed. The retention times and retention time windows were within acceptable limits. The percent difference (%D) of detected concentrations between the dual columns were below the control limit for the detected compound. No qualifiers were applied.

Quantitation/Reporting Limits: Compounds have been properly identified and compounds that are qualitatively identified at concentrations below their respective Contract Required Quantitation Limits (i.e., reporting limits) are reported with a (J) qualifier to indicate that they are quantitative estimates. The (J) qualifier is also used to indicate that the quantitation is an estimate due to discrepancies in meeting quality control criteria. As such, the (UJ) qualifier was applied to two samples (S03M16 and S03M67D2) for high surrogate recoveries (although instrument performance and method detection limits met quality control limits). The (UJ) qualifier indicates that the analyte was analyzed for, but was not detected and the associated detection limit is an estimated value.

Overall Assessment: The checked data were within acceptable quantitation and qualitation limits. Minor issues were identified and qualifiers added; no major issues, however, were encountered during the PCB data validation effort.

QA/QC REVIEW OF METALS DATA

Site 3 - Naval Support Activity (NSA) - Mechanicsburg, PA
SGS Sample Delivery Group No. JD8742
June 2020 – Groundwater Samples

Data Completeness: The data deliverables pertaining to 46 groundwater sample locations, 5 field duplicate samples, and 2 equipment rinsate blank sample were complete. The samples were analyzed for total arsenic, iron, and manganese using EPA Methods 6010D (ICP-AES) and 6020B (ICP-MS). Nine selected samples were also analyzed for dissolved iron.

Chain of Custody: The chain of custody documentation was complete; no qualifiers were applied.

Holding Times: The samples were digested and analyzed within the required holding times. No qualifiers were applied.

Initial and Continuing Calibration Verification: The sequence and frequency of the ICV and CCV runs were met and their values were within control limits (90 – 110 %R) for the samples. No qualifiers were applied.

CRQL Check Standard: The quantitation check standards were run and their values were within control limits; no qualifiers were applied.

Initial and Continuing Calibration Blanks: The sequence and frequency of the initial calibration blank and the continuing calibration blanks were met. The ICB and CCB values were within control limits for the samples. No qualifiers were applied.

Blanks: *Method Blank* – The method blank samples reported the target compounds as not detected. *Equipment Blank* – The equipment rinsate samples (EB-062420 and EB-063020) reported the target compounds as not detected. *Qualifiers* - No qualifiers were applied.

ICP Interference Check Sample: ICSs were analyzed at the beginning and end of each run. All results were within control limits (± 20% of the mean value); no qualifiers were applied.

Field Duplicates: Five field duplicates were collected and analyzed in this SDG. Review of the data between the **samples (S03M17-062420, S03M18-062420, S03M41-062520, S03M50-062520** and **S03M64D1-062420**) and their *duplicates* (*S03M17D-062420, S03M18-062420DUP, S03M41D-062520, S03M50D-062520,* and *S03M64D1D-062420*), indicates good correlation for the detected compounds. No qualifiers were applied.

Matrix Spike/Matrix Spike Duplicate: For the six site-specific MS/MSD samples (S03M17, S03M50, S03M64D1, S03M52, S03M72 and S03M68D1), the percent recoveries and the relative percent differences were within control limits. No qualifiers were applied

Post-Digestion Spike: Post-digestion spike analysis is not applicable if the sample concentration is >4X the spike added and/or the MS recoveries are within control limits. Thus, for the applicable compounds, percent recoveries were within control limits. No qualifiers were applied.

Laboratory Control Sample: The percent recoveries were within control limits (%REC between 80% to 120%) for the LCS samples; no qualifiers were applied.

ICP Serial Dilution: Serial dilution analysis is applicable when compounds are detected >50X the IDL. The %D of serial dilution for compounds detected >50X the IDL (iron) were within control limits. Serial dilution analyses are not applicable for arsenic and manganese. No qualifiers were applied.

Quantitation/Reporting Limits: Compounds that are qualitatively identified at concentrations below their respective Contract Required Quantitation Limits (i.e., reporting limits) are reported with a (J) qualifier to indicate that they are quantitative estimates. The groundwater samples were analyzed at a 2x dilution for arsenic. The arsenic reporting limits were adjusted accordingly.

Overall Assessment: The checked data were within acceptable quantitation and qualitation limits. No major issues were encountered during the data validation effort and no qualifiers were added to the metals analyses.

QA/QC REVIEW OF RSK-175 DISSOLVED GASES DATA

Site 3 - Naval Support Activity (NSA) - Mechanicsburg, PA
SGS Sample Delivery Group No. JD8742
June 2020 – Groundwater Samples

Data Completeness: The data deliverables pertaining to 9 groundwater sample locations were complete. The samples were analyzed in three analytical batches for dissolved gases (methane, ethane, and ethene) using EPA Method RSK-175 (GC).

Chain of Custody: The chain of custody documentation was complete; no qualifiers were applied.

Holding Times: The samples were analyzed within the required holding times; no qualifiers were applied.

Initial Calibration: Initial calibration standards were run at the specified sequence and frequency. The percent relative standard deviations (%RSD) and retention times (RT) were within control limits for the target compounds. No qualifiers were applied.

Continuing Calibration: Continuing calibration standards were run at the specified sequence and frequency. The relative percent difference (%D) were below the control limit of 15% and the RT were within the control limits for the target compounds. No qualifiers were applied.

Blanks: *Method Blank* – The three method blank samples reported the target compounds as not detected. ***Qualifiers*** - No qualifiers were applied.

Lab Control Spike Analyses: The percent recoveries were within the control limits for the three LCS samples. No qualifiers were applied.

Lab Duplicate Analyses: The percent recoveries were within the control limits for the three laboratory duplicate samples. No qualifiers were applied.

Compound ID: All positive-result compounds met retention times and retention time windows were within acceptable limits. No qualifiers were applied.

Quantitation/Reporting Limits: Compounds that are qualitatively identified at concentrations below their respective reporting limits are reported with a (J) qualifier to indicate that they are quantitative estimates.

OVERALL ASSESSMENT: The checked data were within acceptable quantitation and qualitation limits. No major issues were encountered during the data validation effort and no qualifiers were added to the dissolved gases analyses.

QA/QC REVIEW OF GENERAL CHEMISTRY DATA

Site 3 - Naval Support Activity (NSA) - Mechanicsburg, PA
SGS Sample Delivery Group No. JD8742
June 2020 – Groundwater Samples

Data Completeness: The data deliverables pertaining to 9 groundwater sample locations were complete. The samples were analyzed for alkalinity, chloride, ammonia, nitrate, nitrite, nitrogen (nitrate + nitrite), sulfate, sulfide, and total organic carbon (TOC).

Chain of Custody: The chain of custody documentation was complete. No qualifiers were applied.

Holding Times: The samples were prepared and analyzed within the required holding times. No qualifiers were applied.

Calibration Verification: For the applicable analyses, the instruments were calibrated daily and each time the instrument was set up. The frequency and values of the calibration blanks and continuing calibrations were met. No qualifiers were applied.

Blanks: The method blank samples reported the target analytes as not detected. No qualifiers were applied.

Lab Control Spike Analysis: The percent recoveries were within control limits for the LCS samples; no qualifiers were applied.

Lab Duplicates: The relative percent difference for the site-specific samples analyzed as laboratory duplicate samples were within control limits. No qualifiers were applied.

Matrix Spike/Matrix Spike Duplicate: For the MS/MSD analyses, the percent recoveries and relative percent differences were within control limits, with the exception of the TOC analyses, most likely due to relatively high analyte concentration in the original sample relative to the spike amount. No qualifiers were applied.

Overall Assessment: The checked data were within acceptable quantitation and qualitation limits. No major issues were identified during the data validation effort and no qualifiers were added to the general chemistry analyses.